```
DDDDDDDDDDD     EEEEEEEEEEEEEEE  BBBBBBBBBBB      UUU         UUU     GGGGGGGGGGG
DDDDDDDDDDDD    EEEEEEEEEEEEEEE  BBBBBBBBBBBB     UUU         UUU     GGGGGGGGGGGG
DDDDDDDDDDDD    EEEEEEEEEEEEEEE  BBBBBBBBBBBB     UUU         UUU     GGGGGGGGGGGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG
DDD         DDD EEEEEEEEEEE      BBBBBBBBBBBB     UUU         UUU GGG
DDD         DDD EEEEEEEEEEE      BBBBBBBBBBBB     UUU         UUU GGG
DDD         DDD EEEEEEEEEEE      BBBBBBBBBBBB     UUU         UUU GGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG   GGGGGGGGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG   GGGGGGGGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG   GGGGGGGGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG         GGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG         GGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG         GGG
DDDDDDDDDDDD    EEEEEEEEEEEEEEE  BBBBBBBBBBBB      UUUUUUUUUUUUUUUUU     GGGGGGGGG
DDDDDDDDDDDD    EEEEEEEEEEEEEEE  BBBBBBBBBBBB      UUUUUUUUUUUUUUUUU     GGGGGGGGG
DDDDDDDDDDDD    EEEEEEEEEEEEEEE  BBBBBBBBBBBB      UUUUUUUUUUUUUUUUU     GGGGGGGGG
```

```
DDDDDDDD    BBBBBBBB      GGGGGGGG  EEEEEEEEEE  VV      VV  EEEEEEEEEE  NN      NN  TTTTTTTTTT
DDDDDDDD    BBBBBBBB      GGGGGGGG  EEEEEEEEEE  VV      VV  EEEEEEEEEE  NN      NN  TTTTTTTTTT
DD      DD  BB      BB  GG          EE          VV      VV  EE          NN      NN      TT
DD      DD  BB      BB  GG          EE          VV      VV  EE          NN      NN      TT
DD      DD  BB      BB  GG          EE          VV      VV  EE          NNNN    NN      TT
DD      DD  BB      BB  GG          EE          VV      VV  EE          NNNN    NN      TT
DD      DD  BBBBBBBB    GG          EEEEEEEE    VV      VV  EEEEEEEE    NN  NN  NN      TT
DD      DD  BBBBBBBB    GG          EEEEEEEE    VV      VV  EEEEEEEE    NN  NN  NN      TT
DD      DD  BB      BB  GG  GGGGGG  EE          VV      VV  EE          NN    NNNN      TT
DD      DD  BB      BB  GG  GGGGGG  EE          VV      VV  EE          NN    NNNN      TT
DD      DD  BB      BB  GG      GG  EE            VV  VV    EE          NN      NN      TT      ....
DD      DD  BB      BB  GG      GG  EE            VV  VV    EE          NN      NN      TT      ....
DDDDDDDD    BBBBBBBB      GGGGGG    EEEEEEEEEE      VV      EEEEEEEEEE  NN      NN      TT      ....
DDDDDDDD    BBBBBBBB      GGGGGG    EEEEEEEEEE      VV      EEEEEEEEEE  NN      NN      TT      ....

LL            IIIIII      SSSSSSSS
LL            IIIIII      SSSSSSSS
LL              II      SS
LL              II      SS
LL              II      SS
LL              II      SS
LL              II        SSSSSS
LL              II        SSSSSS
LL              II              SS
LL              II              SS
LL              II              SS
LL              II              SS
LLLLLLLLLL    IIIIII    SSSSSSSS
LLLLLLLLLL    IIIIII    SSSSSSSS
```

```
;     1          0001  0 MODULE DBGEVENT (IDENT = 'V04-000') =
;     2          0002  0
;     3          0003  1 BEGIN
;     4          0004  1
;     5          0005  1 !**************************************************************************
;     6          0006  1 !*                                                                        *
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;    24          0024  1 !*                                                                        *
;    25          0025  1 !*                                                                        *
;    26          0026  1 !**************************************************************************
;    27          0027  1 !
;    28          0028  1 ! WRITTEN BY
;    29          0029  1 !       Sidney R Maxwell III    May, 1982
;    30          0030  1 !
;    31          0031  1 ! MODULE FUNCTION
;    32          0032  1 !       This module contains the support routines for the new event-points.
;    33          0033  1 !       Included are the syntax and semantics routines for processing the
;    34          0034  1 !       new command forms, and the support for the new data structures.
;    35          0035  1 !
;    36          0036  1
;    37          0037  1 REQUIRE 'SRC$:DBGPROLOG.REQ';
;    38          0171  1
;    39          0172  1 LIBRARY 'LIB$:DBGGEN.L32';
;    40          0173  1
;    41          0174  1 FORWARD ROUTINE
;    42          0175  1     DBG$EVENT_INITIALIZATION : NOVALUE,  ! Initialize the event structures
;    43          0176  1     DBG$EVENT_SYNTAX,                    ! Handle BREAK/TRACE/WATCH syntax
;    44          0177  1     DBG$EVENT_SEMANTICS,                 ! Handle BREAK/TRACE/WATCH semantics
;    45          0178  1     DBG$EVENT_SHOW_CANCEL_SYNTAX,        ! [SHOW|CANCEL] BREAK/TRACE/WATCH syntax
;    46          0179  1     DBG$EVENT_SHOW_CANCEL_SEMANTICS,     ! Handle BREAK/TRACE/WATCH semantics
;    47          0180  1     DBG$EVENT_CANCEL_ALL: NOVALUE,       ! Cancel all eventpoints
;    48          0181  1     DBG$ACTIVATE_EVENTS: NOVALUE,        ! Activate all set events
;    49          0182  1     DBG$ACTIVATE_EVENT: NOVALUE,         ! Activate a set event
;    50          0183  1     DBG$DEACTIVATE_EVENTS: NOVALUE,      ! Deactivate all set events
;    51          0184  1     DBG$DEACTIVATE_EVENT: NOVALUE,       ! Deactivate a set event
;    52          0185  1     DBG$EXCEPTION_HANDLER,               ! Event Exception Handler
;    53          0186  1     DBG$PROCESS_EVENT,                   ! Process an event
;    54          0187  1     DBG$UPDATE_WATCHPOINTS: NOVALUE,     ! Update the current value of each watchpoint
;    55          0188  1     ANNOUNCE_EVENT: NOVALUE,             ! Announce an event
;    56          0189  1     INSQUE1: NOVALUE,                    ! Insert a queue entry (1st vs 0th)
;    57          0190  1     REMQUE1: NOVALUE,                    ! Remove a queue entry (1st vs 0th)
```

```
;    58          0191  1      SHOW_EVENT_ENTRY: NOVALUE,          ! Show an Event Entry
;    59          0192  1      DELETE_EVENT_ENTRY: NOVALUE,        ! Delete an Event Entry (et al)
;    60          0193  1      PRINT_SOURCE: NOVALUE,              ! Print a source line
;    61          0194  1      PRINT_PC_AND_INSTRUCTION: NOVALUE,  ! Print PC and instruction
;    62          0195  1      PRINT_PC_INST_HANDLER,              ! Handler for above
;    63          0196  1      COMPARE_VMSDESC,                    ! ???
;    64          0197  1      GET_WATCH_POINT_VALUE: NOVALUE,     ! Get the value of the watch pointing
;    65          0198  1                                          !       variable
;    66          0199  1      PRIM_TO_VAL: NOVALUE,               ! Local cover routine for DBG$PRIM_TO_VAL
;    67          0200  1      PRIM_TO_VAL_HANDLER,                ! Handler for above
;    68          0201  1      PARSE_WHEN_CONDITION: NOVALUE,      ! Handler to catch the bad status
;    69          0202  1                                          !       from parsing the WHEN clause
;    70          0203  1      MATCH_RIGHT_CALL_FRAME;             ! Make sure the call frame we got is
;    71          0204  1                                          !       the one we set bit 15 in saved
;    72          0205  1                                          !       PSW
```

```
;    74          0206  1 EXTERNAL ROUTINE
;    75          0207  1     DBG$NGET_ADDRESS,                   ! Get and address from a primary
;    76          0208  1     DBG$MAKE_VAL_DESC,                  ! VMS desc to valdesc
;    77          0209  1     DBG$PRIM_TO_VAL,                    ! Get a value descriptor from a primary
;    78          0210  1     DBG$NGET_SYMID,                     ! Get a SYMID
;    79          0211  1     DBG$NCOPY_DESC,                     ! Copy a primary descriptor
;    80          0212  1     DBG$NFREE_DESC,                     ! Free a primary descriptor
;    81          0213  1     DBG$STA_LOCK_SYMID,                 ! Lock a SYMID
;    82          0214  1     DBG$STA_UNLOCK_SYMID,               ! Unlock a SYMID
;    83          0215  1     DBG$PRINT,                          ! 'Print' an FAO string
;    84          0216  1     DBG$NEWLINE,                        ! Dump 'printed' buffer
;    85          0217  1     DBG$PRINT_VALUE,                    ! 'Print' a value from a val desc
;    86          0218  1     DBG$PRINT_IDENTIFIER,               ! 'Print' an identifier from a primary
;    87          0219  1     DBG$PRINT_IDENTIFIER_PC,            ! 'Print' an identifier from an address
;    88          0220  1     DBG$PUTMSG,                         ! Put an exception message
;    89          0221  1     DBG$PC_TO_LINE_LOOKUP,              ! Match a PC to line
;    90          0222  1     DBG$SRC_TYPE_PC_SOURCE: NOVALUE,    ! Display source line
;    91          0223  1     DBG$INS_DECODE,                     ! Decode [and display] instruction
;    92          0224  1     DBG$OPCODE_INDEX,                   ! Get opcode from mnemonic
;    93          0225  1     DBG$FINAL_HANDL,                    ! DEBUG's final handler
;    94          0226  1     DBG$READ_ACCESS,                    ! Check for read access
;    95          0227  1     DBG$MAP_TO_REG_ADDR,                ! Map an address to register space
;    96          0228  1     DBG$NGET_PAGES,                     ! Get pages from a primary
;    97          0229  1     DBG$DATA_LENGTH,                    ! Get data bit length from VMS descriptor
;    98          0230  1     DBG$IS_IT_ENTRY,                    ! Checks address for entry point
;    99          0231  1     DBG$NMAKE_ARG_VECT,                 ! Constructs a message argument vector
;   100          0232  1     DBG$NSAVE_DECIMAL_INTEGER,          ! Saves an inline numeric literal
;   101          0233  1     DBG$NSAVE_BREAK_BUFFER: NOVALUE,    ! Saves away a break action buffer
;   102          0234  1     DBG$GET_MEMORY,                     ! Get a block of permanent memory
;   103          0235  1     DBG$REL_MEMORY,                     ! Release a block of permanent memory
;   104          0236  1     DBG$GET_TEMPMEM,                    ! Get a block of temporary memory
;   105          0237  1     DBG$REL_TEMPMEM,                    ! Release all of temporary memory
;   106          0238  1     DBG$RST_TEMP_RELEASE: NOVALUE,      ! Release all temporary RST entries
;   107          0239  1     DBG$NNEXT_WORD,                     ! Isolates next word for syntax errors
;   108          0240  1     DBG$NMATCH,                         ! Routine to match keywords
;   109          0241  1     DBG$NPARSE_ADDRESS,                 ! Interface routine to Address Expression Interpreter
;   110          0242  1     DBG$NPARSE_EXPRESSION,              ! Prase an expression
;   111          0243  1     DBG$NTYPE_CONV,                     ! Type converter
;   112          0244  1     DBG$WRITE_MEM,                      ! Write into memory
;   113          0245  1     DBG$NCIS_ADD,                       ! Add command string
;   114          0246  1     DBG$COMMAND_PROC,                   ! Execute a command list
;   115          0247  1     DBG$NINITIALIZE,                    ! Initialize for user commands
;   116          0248  1     DBG$NSYNTAX_ERROR,                  ! Constructs a syntax error message
;   117          0249  1     DBG$SET_STP_LVL : NOVALUE,          ! Set step level
;   118          0250  1     DBG$PSEUDO_PROG,                    ! DEBUG's call code
;   119          0251  1     LIB$SIGNAL: ADDRESSING_MODE (GENERAL),
;   120          0252  1     LIB$STOP;
;   121          0253  1
;   122          0254  1 EXTERNAL
;   123          0255  1     DBG$GB_CALL_NORMAL_RET: BYTE,       ! CALL command status flag; 0 = not in
;   124          0256  1                                         !      a CALL command, 1 = in a CALL
;   125          0257  1                                         !      that has not yet returned, 2 =
;   126          0258  1                                         !      in normal return from a CALL cmd
;   127          0259  1     DBG$GB_RADIX: VECTOR[3, BYTE],      ! Radix settings
;   128          0260  1     DBG$GB_LANGUAGE: BYTE,              ! Current set lang
;   129          0261  1     DBG$GL_SIGN_FLAG,                   ! Flag set to print '+' before signed
;   130          0262  1                                         !      variable
```

```
;  131     0263  1      DBG$GV_CONTROL: DBG$CONTROL_FLAGS,       ! Major State of DEBUG
;  132     0264  1      DBG$GB_STP_PTR:                          ! Current stepping modes
;  133     0265  1          REF EVENT$STEPPING_DESCRIPTOR,
;  134     0266  1      DBG$GB_MOD_PTR: REF VECTOR[,BYTE],       ! Current mode flags
;  135     0267  1      DBG$GL_CISREAD,                          ! Head of command input stream
;  136     0268  1      DBG$GL_CIS_LEVELS,                       ! Number of levels of CIS nesting
;  137     0269  1      DBG$GL_LIB_SIGNAL_ADDR,                  ! Address of LIB$SIGNAL
;  138     0270  1      DBG$GL_LIB_STOP_ADDR,                    ! Address of LIB$STOP
;  139     0271  1      DBG$GL_STEP_NUM,                         ! Step count
;  140     0272  1      DBG$GB_TAKE_CMD: BYTE,                   ! User commands okay (no go etc.)
;  141     0273  1      DBG$RUNFRAME: BLOCK[,BYTE],              ! Run frame
;  142     0274  1      DBG$GB_EXC_BRE_FLAG: BYTE,               ! Encountered an exception break
;  143     0275  1      DBG$GB_GO_ARG_FLAG: BYTE,                ! GO command had an argument
;  144     0276  1      DBG$GB_NO_GLOBALS: BYTE,                 ! Don't convert to global symbol
;  145     0277  1      DBG$OPCODE_KIND_TABLE:                   ! ???
;  146     0278  1                  VECTOR [512,WORD],
;  147     0279  1      DBG$OPCODE_NAME_TABLE:                   ! ???
;  148     0280  1                  BLOCKVECTOR [,10,BYTE],
;  149     0281  1      DBG$PSEUDO_EXIT,                         ! Label in pseudo code for CALL
;  150     0282  1      DBG$PSEUDO_SSI,                          ! Label in pseudo code for
;  151     0283  1                                               !    DBG_SSI_ROUTINE
;  152     0284  1      DBG$GB_SET_SSI_CNT: BYTE,                ! Is watch pointing active?
;  153     0285  1      DBG$TERM_HANDLR,                         ! Label in termination handler
;  154     0286  1      DBG$USER_EXIT,                           ! Label in exit code
;  155     0287  1      PRIM_HANDL_2,                            ! Label in primary handler
;  156     0288  1      DBG$GL_OUTPRAB: BLOCK[,BYTE],            ! RAB for 'OUTPUT'
;  157     0289  1      DBG$GL_ORIG_COMMAND_PTR,                 ! Pointer to original command string
;  158     0290  1      DBG$GL_UPCASE_COMMAND_PTR: VECTOR[2];    !
;  159     0291  1                                               ! Pointers to start and end
;  160     0292  1                                               !    of current command string
;  161     0293  1
;  162     0294  1  GLOBAL
;  163     0295  1      DBG$GB_SET_BREAK_FLAG:                   ! Set to TRUE during processing
;  164     0296  1                  BYTE INITIAL(0),             !      of address in SET BREAK
;  165     0297  1      DBG$GB_SET_WATCH_FLAG:                   ! Set to TRUE during processing
;  166     0298  1                  BYTE INITIAL (0);            !      of System service cycle
;  167     0299  1                                               !      (CALL to RET) for watch point
;  168     0300  1                                               !      value comparison
;  169     0301  1
;  170     0302  1  OWN
;  171     0303  1      INVALID_FLAG,                            ! Set to TRUE when a Primary becomes
;  172     0304  1                                               !    invalid (PRIM_TO_VAL_HANDLER)
;  173     0305  1      NEWVALUE: REF DBG$VALDESC,               ! New value for watch point variable
;  174     0306  1      OLDVALUE: REF DBG$VALDESC,               ! Old value for watch point variable
;  175     0307  1      TYPE_SOURCE,                             ! It's okay to type source
;  176     0308  1      ACCVIO_PC,                               ! PC at an ACCVIO
;  177     0309  1      WATCH_PC,                                ! PC at next instruction after System
;  178     0310  1                                               !      service call when watch pointing
;  179     0311  1                                               !      is trigged, used to report watch
;  180     0312  1                                               !      point address
;  181     0313  1      SKIP_ACCVIOS : INITIAL (FALSE),          ! We're [not initially] skipping ACCVIO's
;  182     0314  1      SKIP_WATCHES : INITIAL (FALSE),          ! Flag set to indicate We t-bit over RET
;  183     0315  1                                               !      of Service call, report watched
;  184     0316  1                                               !      value if there is one
;  185     0317  1      WHEN_CONDITION: REF DBG$VALDESC;         ! Condition for WHEN clause
;  186     0318  1
;  187     0319  1  BUILTIN
```

```
;  188          0320  1     INSQUE,          ! Insert an entry on a list
;  189          0321  1     REMQUE,          ! Remove an entry from a list
;  190          0322  1     PROBER;          ! Probe a location for read-access
```

```
;  192          0323  1 ! Define the QUEUE_HEAD data structure, used to reference the head of
;  193          0324  1 ! a queue.
;  194          0325  1 !
;  195          0326  1 FIELD
;  196          0327  1     QUEUE_HEAD_FIELDS =
;  197          0328  1         SET
;  198          0329  1         A_QUEUE_ENTRY = [0,A_],      ! Queue entry's address
;  199          0330  1
;  200          0331  1         L_QUEUE_FLINK = [0,L_],      ! Queue's 0th (normal) Forward LINK
;  201          0332  1         L_QUEUE_BLINK = [1,L_],      ! Queue's 0th (normal) Backward Link
;  202          0333  1
;  203          0334  1         L_QUEUE_FLINK1 = [2,L_],     ! Queue's 1st Forward LINK
;  204          0335  1         L_QUEUE_BLINK1 = [3,L_]      ! Queue's 1st Backward Link
;  205          0336  1         TES;
;  206          0337  1
;  207          0338  1
;  208          0339  1 MACRO QUEUE_HEAD = BLOCK [4,LONG] FIELD (QUEUE_HEAD_FIELDS)%;
;  209          0340  1
;  210          0341  1 GLOBAL
;  211          0342  1     EVENT$CMD_QUEUE:         QUEUE_HEAD,          ! Command Queue
;  212          0343  1     EVENT$DO_LIST_QUEUE:     QUEUE_HEAD,          ! DO List Queue
;  213          0344  1     EVENT$WHEN_QUEUE:        QUEUE_HEAD,          ! WHEN    Queue
;  214          0345  1     EVENT$PAGE_QUEUE:        QUEUE_HEAD,          ! PAGE    Queue
;  215          0346  1
;  216          0347  1
;  217          0348  1     ! The following is used to flag a stop, such as from a BREAK or the
;  218          0349  1     ! end of a STEP, as opposed to a TRACE....
;  219          0350  1     !
;  220          0351  1     EVENT$B_STOP_USER :      BYTE;
```

```
;  222          0352  1 OWN
;  223          0353  1     ! Opcode Table for /INSTRUCTION = (<mnemonic> ,...)
;  224          0354  1     !
;  225          0355  1     DBG$OPCODES_USER :  BITVECTOR[512],
;  226          0356  1
;  227          0357  1
;  228          0358  1     ! Opcode Table for STEP/INSTRUCTION = (<mnemonic> ,...)
;  229          0359  1     !
;  230          0360  1     DBG$OPCODES_STEP_USER : BITVECTOR[512],
;  231          0361  1
;  232          0362  1
;  233          0363  1     ! Opcode Table for /CALL events.
;  234          0364  1     !
;  235          0365  1     DBG$OPCODES_CALL :  BITVECTOR[512]
;  236          0366  1                         PRESET
;  237          0367  1                         ([%X'0FB'] = 1, ! CALLS
;  238          0368  1                          [%X'0FA'] = 1, ! CALLG
;  239          0369  1                          [%X'030'] = 1, ! BSBW
;  240          0370  1                          [%X'010'] = 1, ! BSBB
;  241          0371  1                          [%X'016'] = 1, ! JSB
;  242          0372  1                          [%X'005'] = 1, ! RSB
;  243          0373  1                          [%X'004'] = 1  ! RET
;  244          0374  1                         ),
;  245          0375  1
;  246          0376  1
;  247          0377  1     ! Opcode Table for /BRANCH events.
;  248          0378  1     !
;  249          0379  1     DBG$OPCODES_BRANCH :        BITVECTOR[512]
;  250          0380  1                         PRESET
;  251          0381  1                         ([%X'012'] = 1, ! BNEQ or BNEQU
;  252          0382  1                          [%X'013'] = 1, ! BEQL or BEQLU
;  253          0383  1                          [%X'014'] = 1, ! BGTR
;  254          0384  1                          [%X'015'] = 1, ! BLEQ
;  255          0385  1                          [%X'018'] = 1, ! BGEQ
;  256          0386  1                          [%X'019'] = 1, ! BLSS
;  257          0387  1                          [%X'01A'] = 1, ! BGTRU
;  258          0388  1                          [%X'01B'] = 1, ! BLEQU
;  259          0389  1                          [%X'01C'] = 1, ! BVC
;  260          0390  1                          [%X'01D'] = 1, ! BVS
;  261          0391  1                          [%X'01E'] = 1, ! BGEQU or BCC
;  262          0392  1                          [%X'01F'] = 1, ! BLSSU or BCS
;  263          0393  1                          [%X'011'] = 1, ! BRB
;  264          0394  1                          [%X'031'] = 1, ! BRW
;  265          0395  1                          [%X'017'] = 1, ! JMP
;  266          0396  1                          [%X'0E0'] = 1, ! BBS
;  267          0397  1                          [%X'0E1'] = 1, ! BBC
;  268          0398  1                          [%X'0E2'] = 1, ! BBSS
;  269          0399  1                          [%X'0E3'] = 1, ! BBCS
;  270          0400  1                          [%X'0E4'] = 1, ! BBSC
;  271          0401  1                          [%X'0E5'] = 1, ! BBCC
;  272          0402  1                          [%X'0E6'] = 1, ! BBSSI
;  273          0403  1                          [%X'0E7'] = 1, ! BBCCI
;  274          0404  1                          [%X'0E8'] = 1, ! BLBS
;  275          0405  1                          [%X'0E9'] = 1, ! BLBC
;  276          0406  1                          [%X'09D'] = 1, ! ACBB
;  277          0407  1                          [%X'03D'] = 1, ! ACBW
;  278          0408  1                          [%X'0F1'] = 1  ! ACBL
```

```
;  279          0409  1                        [%X'04F'] = 1,  ! ACBF
;  280          0410  1                        [%X'06F'] = 1,  ! ACBD
;  281          0411  1                        [%X'14F'] = 1,  ! ACBG
;  282          0412  1                        [%X'16F'] = 1,  ! ACBH
;  283          0413  1                        [%X'0F3'] = 1,  ! AOBLEQ
;  284          0414  1                        [%X'0F2'] = 1,  ! AOBLSS
;  285          0415  1                        [%X'0F4'] = 1,  ! SOBGEQ
;  286          0416  1                        [%X'0F5'] = 1,  ! SOBGTR
;  287          0417  1                        [%X'08F'] = 1,  ! CASEB
;  288          0418  1                        [%X'0AF'] = 1,  ! CASEW
;  289          0419  1                        [%X'0CF'] = 1   ! CASEL
;  290          0420  1                       ),
;  291          0421  1
;  292          0422  1
;  293          0423  1      ! Opcode Table for stepping /OVER.
;  294          0424  1      !
;  295          0425  1      DBG$OPCODES_STEP_OVER : BITVECTOR[512]
;  296          0426  1                              PRESET
;  297          0427  1                              ([%X'0FB'] = 1,  ! CALLS
;  298          0428  1                               [%X'0FA'] = 1,  ! CALLG
;  299          0429  1                               [%X'030'] = 1,  ! BSBW
;  300          0430  1                               [%X'010'] = 1,  ! BSBB
;  301          0431  1                               [%X'016'] = 1   ! JSB
;  302          0432  1                              );
```

```
;  304          0433  1 MACRO
;  305          0434  1
;  306          0435  1     ! Calculate word length from bit length.
;  307          0436  1     !
;  308        M 0437  1     BIT_TO_WORD_LENGTH (BIT_LENGTH) =
;  309        M 0438  1         ((BIT_LENGTH + %BPVAL - 1) / %BPVAL)
;  310          0439  1     %,
;  311          0440  1
;  312          0441  1
;  313          0442  1     ! Setup a UPLIT %ASCIC string.
;  314          0443  1     !
;  315        M 0444  1     $AC (STRING) =
;  316        M 0445  1         UPLIT BYTE (%ASCIC STRING)
;  317          0446  1     %,
;  318          0447  1
;  319          0448  1
;  320          0449  1     ! Test <string> for a match with the input string.
;  321          0450  1     !
;  322        M 0451  1     MATCH (STRING) =
;  323        M 0452  1         (DBG$NMATCH(.INPUT_DESC, STRING,
;  324          0453  1                 %IF %NULL (%REMAINING) %THEN 1 %ELSE %REMAINING %FI)) %,
;  325          0454  1
;  326          0455  1
;  327          0456  1     ! Match <string> to the input string, and give a syntax
;  328          0457  1     ! error if <string> does not match.
;  329          0458  1     !
;  330        M 0459  1     NEED_MATCH (STRING) =
;  331          0460  1         (IF NOT MATCH (STRING) THEN SYNTAX_ERROR;) %,
;  332          0461  1
;  333          0462  1
;  334          0463  1     ! Syntax Error
;  335          0464  1     !
;  336        M 0465  1     SYNTAX_ERROR =
;  337        M 0466  1         BEGIN
;  338        M 0467  1         .MESSAGE_VECT =
;  339        M 0468  1             (IF MATCH (DBG$CS_CR)
;  340        M 0469  1              THEN
;  341        M 0470  1                 DBG$NMAKE_ARG_VECT (DBG$_NEEDMORE)
;  342        M 0471  1              ELSE
;  343        M 0472  1                 DBG$NSYNTAX_ERROR (DBG$NNEXT_WORD (.INPUT_DESC))
;  344        M 0473  1             );
;  345        M 0474  1             RETURN STS$K_SEVERE
;  346        M 0475  1         END
;  347          0476  1     %,
;  348          0477  1
;  349          0478  1
;  350          0479  1     ! Allocate an adverb node.
;  351          0480  1     !
;  352        M 0481  1     GET_ADVERB_NODE =
;  353        M 0482  1         BEGIN
;  354        M 0483  1         ADVERB_NODE = DBG$GET_TEMPMEM (DBG$K_ADVERB_NODE_SIZE);
;  355        M 0484  1         ADVERB_NODE [DBG$L_ADVERB_LINK] = 0;
;  356        M 0485  1         .ADVERB_LINK = .ADVERB_NODE;
;  357        M 0486  1         ADVERB_LINK = ADVERB_NODE [DBG$L_ADVERB_LINK]
;  358        M 0487  1         END
;  359          0488  1     %,
;  360          0489  1
```

```
;  361          0490  1
;  362          0491  1      ! Allocate a noun node.
;  363          0492  1      !
;  364        M 0493  1      GET_NOUN_NODE =
;  365        M 0494  1          BEGIN
;  366        M 0495  1          NOUN_NODE = DBG$GET_TEMPMEM (DBG$K_NOUN_NODE_SIZE);
;  367        M 0496  1          NOUN_NODE [DBG$L_NOUN_LINK] = 0;
;  368        M 0497  1          .NOUN_LINK = .NOUN_NODE;
;  369        M 0498  1          NOUN_LINK = NOUN_NODE [DBG$L_NOUN_LINK]
;  370        M 0499  1          END
;  371          0500  1      %,
;  372          0501  1
;  373          0502  1
;  374          0503  1      ! Write an opcode to memory.
;  375          0504  1      !
;  376        M 0505  1      WRITE_OPCODE (ADDRESS, OPCODE) =
;  377        M 0506  1          (   LOCAL
;  378        M 0507  1                  OP;
;  379        M 0508  1
;  380        M 0509  1              OP = OPCODE;
;  381        M 0510  1              DBG$WRITE_MEM (ADDRESS, OP, 1)
;  382        M 0511  1          )
;  383          0512  1      %;
```

```
;  385          0513  1 ! Literals
;  386          0514  1 !
;  387          0515  1 LITERAL
;  388          0516  1
;  389          0517  1
;  390          0518  1     ! Define the adverb literals, used to describe the contents
;  391          0519  1     ! of an adverb node.
;  392          0520  1     !
;  393        P 0521  1     ENUMERATE   (0, ADVERB_AFTER,
;  394        P 0522  1                     ADVERB_TEMPORARY,
;  395        P 0523  1                     ADVERB_SILENT,
;  396        P 0524  1                     ADVERB_NOSILENT,
;  397        P 0525  1                     ADVERB_WHEN,
;  398        P 0526  1                     ADVERB_DO,
;  399        P 0527  1
;  400        P 0528  1                     ADVERB_READ,
;  401        P 0529  1                     ADVERB_WRITE,
;  402        P 0530  1                     ADVERB_MODIFY,
;  403        P 0531  1                     ADVERB_EXECUTE,
;  404        P 0532  1                     ADVERB_RETURN,
;  405        P 0533  1                     ADVERB_EXCEPTION,
;  406        P 0534  1                     ADVERB_SOURCE,
;  407        P 0535  1                     ADVERB_NOSOURCE,
;  408        P 0536  1                     ADVERB_SYSTEM,
;  409        P 0537  1                     ADVERB_NOSYSTEM,
;  410        P 0538  1                     ADVERB_INTO,
;  411        P 0539  1                     ADVERB_OVER,
;  412        P 0540  1                     ADVERB_CALL,
;  413        P 0541  1                     ADVERB_BRANCH,
;  414        P 0542  1                     ADVERB_LINE,
;  415        P 0543  1                     ADVERB_INSTRUCTION,
;  416        P 0544  1                     ADVERB_OPCODE,
;  417        P 0545  1                     ADVERB_ALL
;  418          0546  1                 );
;  419          0547  1
```

```
;  421          0548  1 GLOBAL ROUTINE DBG$EVENT_INITIALIZATION: NOVALUE =
;  422          0549  1 !
;  423          0550  1 ! FUNCTION
;  424          0551  1 !       This routine is called to initialize the event structures when
;  425          0552  1 !       DEBUG is first entered.
;  426          0553  1 !
;  427          0554  1 ! INPUTS
;  428          0555  1 !       None
;  429          0556  1 !
;  430          0557  1 ! OUTPUTS
;  431          0558  1 !       None
;  432          0559  1 !
;  433          0560  1
;  434          0561  2     BEGIN
;  435          0562  2
;  436          0563  2
;  437          0564  2     ! Intialize the head of the Command Queue.
;  438          0565  2     !
;  439          0566  2     EVENT$CMD_QUEUE [L_QUEUE_FLINK] = EVENT$CMD_QUEUE;
;  440          0567  2     EVENT$CMD_QUEUE [L_QUEUE_BLINK] = EVENT$CMD_QUEUE;
;  441          0568  2     EVENT$CMD_QUEUE [L_QUEUE_FLINK1] = EVENT$CMD_QUEUE;
;  442          0569  2     EVENT$CMD_QUEUE [L_QUEUE_BLINK1] = EVENT$CMD_QUEUE;
;  443          0570  2
;  444          0571  2
;  445          0572  2     ! Initialize the head of the DO List Queue.
;  446          0573  2     !
;  447          0574  2     EVENT$DO_LIST_QUEUE [L_QUEUE_FLINK] = EVENT$DO_LIST_QUEUE;
;  448          0575  2     EVENT$DO_LIST_QUEUE [L_QUEUE_BLINK] = EVENT$DO_LIST_QUEUE;
;  449          0576  2
;  450          0577  2
;  451          0578  2     ! Initialize the head of the WHEN Queue.
;  452          0579  2     !
;  453          0580  2     EVENT$WHEN_QUEUE [L_QUEUE_FLINK] = EVENT$WHEN_QUEUE;
;  454          0581  2     EVENT$WHEN_QUEUE [L_QUEUE_BLINK] = EVENT$WHEN_QUEUE;
;  455          0582  2
;  456          0583  2
;  457          0584  2     ! Initialize the head of the PAGE Queue.
;  458          0585  2     !
;  459          0586  2     EVENT$PAGE_QUEUE [L_QUEUE_FLINK] = EVENT$PAGE_QUEUE;
;  460          0587  2     EVENT$PAGE_QUEUE [L_QUEUE_BLINK] = EVENT$PAGE_QUEUE;
;  461          0588  1     END;

                                .TITLE  DBGFVENT
                                .IDENT  \V04-000\

                                .PSECT  DBG$OWN,NOEXE,  PIC,2

                    00000 INVALID_FLAG:
                                .BLKB   4
                    00004 NEWVALUE:
                                .BLKB   4
                    00008 OLDVALUE:
                                .BLKB   4
                    0000C TYPE_SOURCE:
                                .BLKB   4
                    00010 ACCVIO_PC:
```

```
                                .BLKB   4
                00014 WATCH_PC:
                                .BLKB   4
            00000000  00018 SKIP_ACCVIOS:
                                .LONG   0                                       ;
            00000000  0001C SKIP_WATCHES:
                                .LONG   0                                       ;
                00020 WHEN_CONDITION:
                                .BLKB   4
                00024 DBG$OPCODES_USER:
                                .BLKB   64
                00064 DBG$OPCODES_STEP_USER:
                                .BLKB   64
                  30  000A4 DBG$OPCODES_CALL:
                                .BYTE   48                                      ;
                  00  000A5             .BYTE   0                               ;
                  41  000A6             .BYTE   65                              ;
                  00# 000A7             .BYTE   0[3]                            ;
                  01  000AA             .BYTE   1                               ;
                  00# 000AB             .BYTE   0[24]                           ;
                  0C  000C3             .BYTE   12                              ;
                      000C4             .BLKB   32
                  00# 000E4 DBG$OPCODES_BRANCH:
                                .BYTE   0[2]                                    ;
                FF BE 000E6             .BYTE   -66, -1                         ;
                  00# 000E8             .BYTE   0[2]                            ;
                20 02 000EA             .BYTE   2, 32                           ;
                  00  000EC             .BYTE   0                               ;
                  80  000ED             .BYTE   -128                            ;
                  00# 000EE             .BYTE   0[3]                            ;
                  80  000F1             .BYTE   -128                            ;
                  00# 000F2             .BYTE   0[3]                            ;
                  80  000F5             .BYTE   -128                            ;
                  00  000F6             .BYTE   0                               ;
                  20  000F7             .BYTE   32                              ;
                  00  000F8             .BYTE   0                               ;
                  80  000F9             .BYTE   -128                            ;
                  00# 000FA             .BYTE   0[3]                            ;
                  80  000FD             .BYTE   -128                            ;
                  00# 000FE             .BYTE   0[2]                            ;
            3E 03 FF  00100             .BYTE   -1, 3, 62                       ;
                  00# 00103             .BYTE   0[10]                           ;
                  80  0010D             .BYTE   -128                            ;
                  00# 0010E             .BYTE   0[3]                            ;
                  80  00111             .BYTE   -128                            ;
                      00112             .BLKB   18
                  00# 00124 DBG$OPCODES_STEP_OVER:
                                .BYTE   0[2]                                    ;
                  41  00126             .BYTE   65                              ;
                  00# 00127             .BYTE   0[3]                            ;
                  01  0012A             .BYTE   1                               ;
                  00# 0012B             .BYTE   0[24]                           ;
                  0C  00143             .BYTE   12                              ;
                      00144             .BLKB   32

                                .PSECT  DBG$GLOBAL,NOEXE,  PIC,2
```

```
00  00000 DBG$GB_SET_BREAK_FLAG::
                .BYTE   0                                               ;
00  00001 DBG$GB_SET_WATCH_FLAG::
                .BYTE   0                                               ;
    00002       .BLKB   2
    00004 EVENT$CMD_QUEUE::
                .BLKB   16
    00014 EVENT$DO_LIST_QUEUE::
                .BLKB   16
    00024 EVENT$WHEN_QUEUE::
                .BLKB   16
    00034 EVENT$PAGE_QUEUE::
                .BLKB   16
    00044 EVENT$B_STOP_USER::
                .BLKB   1

                .EXTRN  DBG$NGET_ADDRESS
                .EXTRN  DBG$MAKE_VAL_DESC
                .EXTRN  DBG$PRIM_TO_VAL
                .EXTRN  DBG$NGET_SYMID, DBG$NCOPY_DESC
                .EXTRN  DBG$NFREE_DESC, DBG$STA_LOCK_SYMID
                .EXTRN  DBG$STA_UNLOCK_SYMID
                .EXTRN  DBG$PRINT, DBG$NEWLINE
                .EXTRN  DBG$PRINT_VALUE
                .EXTRN  DBG$PRINT_IDENTIFIER
                .EXTRN  DBG$PRINT_IDENTIFIER_PC
                .EXTRN  DBG$PUTMSG, DBG$PC_TO_LINE_LOOKUP
                .EXTRN  DBG$SRC_TYPE_PC_SOURCE
                .EXTRN  DBG$INS_DECODE, DBG$OPCODE_INDEX
                .EXTRN  DBG$FINAL_HANDL
                .EXTRN  DBG$READ_ACCESS
                .EXTRN  DBG$MAP_TO_REG_ADDR
                .EXTRN  DBG$NGET_PAGES, DBG$DATA_LENGTH
                .EXTRN  DBG$IS_IT_ENTRY
                .EXTRN  DBG$NMAKE_ARG_VECT
                .EXTRN  DBG$NSAVE_DECIMAL_INTEGER
                .EXTRN  DBG$NSAVE_BREAK_BUFFER
                .EXTRN  DBG$GET_MEMORY, DBG$REL_MEMORY
                .EXTRN  DBG$GET_TEMPMEM
                .EXTRN  DBG$REL_TEMPMEM
                .EXTRN  DBG$RST_TEMP_RELEASE
                .EXTRN  DBG$NNEXT_WORD, DBG$NMATCH
                .EXTRN  DBG$NPARSE_ADDRESS
                .EXTRN  DBG$NPARSE_EXPRESSION
                .EXTRN  DBG$NTYPE_CONV, DBG$WRITE_MEM
                .EXTRN  DBG$NCIS_ADD, DBG$COMMAND_PROC
                .EXTRN  DBG$NINITIALIZE
                .EXTRN  DBG$NSYNTAX_ERROR
                .EXTRN  DBG$SET_STP_LVL
                .EXTRN  DBG$PSEUDO_PROG
                .EXTRN  LIB$SIGNAL, LIB$STOP
                .EXTRN  DBG$GB_CALL_NORMAL_RET
                .EXTRN  DBG$GB_RADIX, DBG$GB_LANGUAGE
                .EXTRN  DBG$GL_SIGN_FLAG
                .EXTRN  DBG$GV_CONTROL, DBG$GB_STP_PTR
                .EXTRN  DBG$GB_MOD_PTR, DBG$GL_CISREAD
                .EXTRN  DBG$GL_CIS_LEVELS
```

```
                        .EXTRN  DBG$GL_LIB_SIGNAL_ADDR
                        .EXTRN  DBG$GL_LIB_STOP_ADDR
                        .EXTRN  DBG$GL_STEP_NUM
                        .EXTRN  DBG$GB_TAKE_CMD
                        .EXTRN  DBG$RUNFRAME, DBG$GB_EXC_BRE_FLAG
                        .EXTRN  DBG$GB_GO_ARG_FLAG
                        .EXTRN  DBG$GB_NO_GLOBALS
                        .EXTRN  DBG$OPCODE_KIND_TABLE
                        .EXTRN  DBG$OPCODE_NAME_TABLE
                        .EXTRN  DBG$PSEUDO_EXIT
                        .EXTRN  DBG$PSEUDO_SSI, DBG$GB_SET_SSI_CNT
                        .EXTRN  DBG$TERM_HANDLR
                        .EXTRN  DBG$USER_EXIT, PRIM_HANDL_2
                        .EXTRN  DBG$GL_OUTPRAB, DBG$GL_ORIG_COMMAND_PTR
                        .EXTRN  DBG$GL_UPCASE_COMMAND_PTR

                        .PSECT  DBG$CODE,NOWRT,  SHR,  PIC,0

                    0004 00000  .ENTRY  DBG$EVENT_INITIALIZATION, Save R2          ; 0548
          52 00000000'  EF  9E 00002  MOVAB   EVENT$CMD_QUEUE, R2                 ;
          62            62  9E 00009  MOVAB   EVENT$CMD_QUEUE, EVENT$CMD_QUEUE   ; 0566
    04    A2            62  9E 0000C  MOVAB   EVENT$CMD_QUEUE, EVENT$CMD_QUEUE+4 ; 0567
    08    A2            62  9E 00010  MOVAB   EVENT$CMD_QUEUE, EVENT$CMD_QUEUE+8 ; 0568
    0C    A2            62  9E 00014  MOVAB   EVENT$CMD_QUEUE, EVENT$CMD_QUEUE+12 ; 0569
    10    A2       10   A2  9E 00018  MOVAB   EVENT$DO_LIST_QUEUE, EVENT$DO_LIST_QUEUE ; 0574
    14    A2       10   A2  9E 0001D  MOVAB   EVENT$DO_LIST_QUEUE, EVENT$DO_LIST_QUEUE+4 ; 0575
    20    A2       20   A2  9E 00022  MOVAB   EVENT$WHEN_QUEUE, EVENT$WHEN_QUEUE ; 0580
    24    A2       20   A2  9E 00027  MOVAB   EVENT$WHEN_QUEUE, EVENT$WHEN_QUEUE+4 ; 0581
    30    A2       30   A2  9E 0002C  MOVAB   EVENT$PAGE_QUEUE, EVENT$PAGE_QUEUE ; 0586
    34    A2       30   A2  9E 00031  MOVAB   EVENT$PAGE_QUEUE, EVENT$PAGE_QUEUE+4 ; 0587
                        04  00036  RET                                          ; 0588

; Routine Size:  55 bytes,    Routine Base:  DBG$CODE + 0000
```

```
;  463          0589  1 GLOBAL ROUTINE DBG$EVENT_SYNTAX(INPUT_DESC, VERB_NODE, MESSAGE_VECT) =
;  464          0590  1
;  465          0591  1 !++
;  466          0592  1 ! FUNCTION
;  467          0593  1 !       This routine parses a step, break, trace, or watch point command,
;  468          0594  1 !       after the '[SET] STEP', 'SET BREAK', 'SET TRACE', or 'SET WATCH'
;  469          0595  1 !       has been parsed.  This routine is called from DBGNSET (or DBGNSTEP).
;  470          0596  1 !
;  471          0597  1 !       The following syntax is accepted:
;  472          0598  1 !
;  473          0599  1 !       SET [ BREAK ! TRACE ! WATCH ]
;  474          0600  1 !           [ /AFTER : <n> ]
;  475          0601  1 !           [ /TEMPORARY ]
;  476          0602  1 !           [ /[NO]SILENT ]
;  477          0603  1 !           <event>
;  478          0604  1 !           [ WHEN (<expression>) ]
;  479          0605  1 !           [ DO (<command list>) ]
;  480          0606  1 !
;  481          0607  1 !       If the event is a watchpoint, <event> is:
;  482          0608  1 !
;  483          0609  1 !       <address> [ , <address> ]*
;  484          0610  1 !
;  485          0611  1 !       otherwise, <event> is:
;  486          0612  1 !
;  487          0613  1 !       [ /READ ! /WRITE ! /MODIFY ! /EXECUTE ! /RETURN ]
;  488          0614  1 !           <address> [ , <address> ]* !
;  489          0615  1 !       [ /EXCEPTION ] !
;  490          0616  1 !       [ /[NO]SOURCE ! /[NO]SYSTEM ! /INTO ! /OVER ]*
;  491          0617  1 !           [  /CALLS ! /RETURN ! /BRANCH ! /LINE ! /INSTRUCTION
;  492          0618  1 !               [ = [ <mnemonic> ! ( <mnemonic> [ , <mnemonic> ] ) ]]
;  493          0619  1 !           ]
;  494          0620  1 !
;  495          0621  1 !       SET STEP
;  496          0622  1 !       [ [NO]SILENT
;  497          0623  1 !       [ [NO]SOURCE ! [NO]SYSTEM ! INTO ! OVER ]*
;  498          0624  1 !           [  CALLS ! RETURN ! BRANCH ! LINE ! INSTRUCTION
;  499          0625  1 !               [ = [ <mnemonic> ! ( <mnemonic> [ , <mnemonic> ] ) ]]
;  500          0626  1 !           ]
;  501          0627  1 !
;  502          0628  1 !       STEP
;  503          0629  1 !       [ /[NO]SILENT
;  504          0630  1 !       [ /[NO]SOURCE ! /[NO]SYSTEM ! /INTO ! /OVER ]*
;  505          0631  1 !           [  /CALLS ! /RETURN ! /BRANCH ! /LINE ! /INSTRUCTION
;  506          0632  1 !               [ = [ <mnemonic> ! ( <mnemonic> [ , <mnemonic> ] ) ]]
;  507          0633  1 !           ]
;  508          0634  1 !
;  509          0635  1 ! INPUTS
;  510          0636  1 !       INPUT_DESC:     The current command line input descriptor.
;  511          0637  1 !       VERB_NODE:      A pointer to a DEBUG verb node, with the COMPOSITE
;  512          0638  1 !                       attribute set to EVENT$K_SET_BREAK, EVENT$K_SET_TRACE,
;  513          0639  1 !                       EVENT$K_SET_WATCH, EVENT$K_SET_STEP, or EVENT$K_STEP.
;  514          0640  1 !
;  515          0641  1 !       MESSAGE_VECT:   The address of a longword to contain the address
;  516          0642  1 !                       of a message argument vector.
;  517          0643  1 !
;  518          0644  1 ! OUTPUTS
;  519          0645  1 !       The parse tree headed by VERB_NODE is created to represent the
```

```
;  520          0646  1 !       command parsed.  Errors cause this routine to return STS$K_SEVERE,
;  521          0647  1 !       otherwise STS$K_SUCCESS.
;  522          0648  1 !
;  523          0649  1
;  524          0650  2     BEGIN
;  525          0651  2
;  526          0652  2     MAP
;  527          0653  2         VERB_NODE: REF DBG$VERB_NODE;   ! Verb node pointer
;  528          0654  2
;  529          0655  2     LOCAL
;  530          0656  2         STATUS,                         ! Returned status
;  531          0657  2         ADVERB_NODE: REF DBG$ADVERB_NODE, ! Adverb node pointer
;  532          0658  2         ADVERB_LINK: REF DBG$ADVERB_NODE, ! Adverb node link
;  533          0659  2         NOUN_NODE: REF DBG$NOUN_NODE,   ! Noun node pointer
;  534          0660  2         NOUN_LINK: REF DBG$NOUN_NODE,   ! Noun node link
;  535          0661  2         CMD_TYPE,                       ! Command type
;  536          0662  2         CMD_KIND,                       ! Command Kind
;  537          0663  2         SUB_KIND,                       ! Command sub-kind
;  538          0664  2         AFTER_COUNT,                    ! After count
;  539          0665  2         TEMPORARY,                      ! Temporary flag
;  540          0666  2         SILENT,                         ! Silent flag
;  541          0667  2         SOURCE,                         ! Source flag
;  542          0668  2         NOSILENT,                       ! Nosilent flag
;  543          0669  2         NOSOURCE,                       ! Nosource flag
;  544          0670  2         SYSTEM,                         ! System flag
;  545          0671  2         NOSYSTEM,                       ! Nosystem flag
;  546          0672  2         INTO,                           ! Into flag
;  547          0673  2         OVER;                           ! Over flag
;  548          0674  2
;  549          0675  2
;  550          0676  2     BIND
;  551          0677  2
;  552          0678  2
;  553          0679  2         ! Define the character strings to parse.
;  554          0680  2         !
;  555          0681  2         DBG$CS_AFTER =          $AC ('AFTER'),
;  556          0682  2         DBG$CS_TEMPORARY =      $AC ('TEMPORARY'),
;  557          0683  2         DBG$CS_SILENT =         $AC ('SILENT'),
;  558          0684  2         DBG$CS_NOSILENT =       $AC ('NOSILENT'),
;  559          0685  2         DBG$CS_WHEN =           $AC ('WHEN'),
;  560          0686  2         DBG$CS_DO =             $AC ('DO'),
;  561          0687  2         DBG$CS_READ =           $AC ('READ'),
;  562          0688  2         DBG$CS_WRITE =          $AC ('WRITE'),
;  563          0689  2         DBG$CS_MODIFY =         $AC ('MODIFY'),
;  564          0690  2         DBG$CS_EXECUTE =        $AC ('EXECUTE'),
;  565          0691  2         DBG$CS_RETURN =         $AC ('RETURN'),
;  566          0692  2         DBG$CS_SOURCE =         $AC ('SOURCE'),
;  567          0693  2         DBG$CS_NOSOURCE =       $AC ('NOSOURCE'),
;  568          0694  2         DBG$CS_SYSTEM =         $AC ('SYSTEM'),
;  569          0695  2         DBG$CS_NOSYSTEM =       $AC ('NOSYSTEM'),
;  570          0696  2         DBG$CS_INTO =           $AC ('INTO'),
;  571          0697  2         DBG$CS_OVER =           $AC ('OVER'),
;  572          0698  2         DBG$CS_EXCEPTION =      $AC ('EXCEPTION'),
;  573          0699  2         DBG$CS_CALL =           $AC ('CALLS'),
;  574          0700  2         DBG$CS_BRANCH =         $AC ('BRANCH'),
;  575          0701  2         DBG$CS_LINE =           $AC ('LINE'),
;  576          0702  2         DBG$CS_INSTRUCTION =    $AC ('INSTRUCTION'),
```

```
;  577          0703  2          DBG$CS_EQUALS =          $AC ('='),
;  578          0704  2          DBG$CS_L_PAREN =         $AC ('('),
;  579          0705  2          DBG$CS_R_PAREN =         $AC (')'),
;  580          0706  2          DBG$CS_COMMA =           $AC (','),
;  581          0707  2          DBG$CS_SLASH =           $AC ('/'),
;  582          0708  2          DBG$CS_COLON =           $AC (':'),
;  583          0709  2          DBG$CS_CR =              UPLIT BYTE (1, DBG$K_CAR_RETURN);
;  584          0710  2
;  585          0711  2
;  586          0712  2
;  587          0713  2      ! Initialize the verb's adverb and noun pointers to null.
;  588          0714  2      !
;  589          0715  2      VERB_NODE [DBG$L_VERB_ADVERB_PTR] = 0;
;  590          0716  2      VERB_NODE [DBG$L_VERB_OBJECT_PTR] = 0;
;  591          0717  2
;  592          0718  2
;  593          0719  2      ! Initialize the adverb and noun links.
;  594          0720  2      !
;  595          0721  2      ADVERB_LINK = VERB_NODE [DBG$L_VERB_ADVERB_PTR];
;  596          0722  2      NOUN_LINK = VERB_NODE [DBG$L_VERB_OBJECT_PTR];
;  597          0723  2
;  598          0724  2
;  599          0725  2      ! Set the default command descriptors....
;  600          0726  2      !
;  601          0727  2      SELECTONE .VERB_NODE [DBG$B_VERB_COMPOSITE] OF
;  602          0728  2          SET
;  603          0729  2
;  604          0730  2
;  605          0731  2          [EVENT$K_SET_BREAK]:
;  606          0732  3              BEGIN
;  607          0733  3              CMD_TYPE = EVENT$K_TYPE_BREAK;
;  608          0734  3              CMD_KIND = EVENT$K_KIND_ACC;
;  609          0735  3              SUB_KIND = EVENT$K_ACC_EXEC;
;  610          0736  2              END;
;  611          0737  2
;  612          0738  2
;  613          0739  2          [EVENT$K_SET_TRACE]:
;  614          0740  3              BEGIN
;  615          0741  3              CMD_TYPE = EVENT$K_TYPE_TRACE;
;  616          0742  3              CMD_KIND = EVENT$K_KIND_ACC;
;  617          0743  3              SUB_KIND = EVENT$K_ACC_EXEC;
;  618          0744  2              END;
;  619          0745  2
;  620          0746  2
;  621          0747  2          [EVENT$K_SET_WATCH]:
;  622          0748  3              BEGIN
;  623          0749  3              CMD_TYPE = EVENT$K_TYPE_WATCH;
;  624          0750  3              CMD_KIND = EVENT$K_KIND_ACC;
;  625          0751  3              SUB_KIND = EVENT$K_ACC_MDFY;
;  626          0752  2              END;
;  627          0753  2
;  628          0754  2
;  629          0755  2          [EVENT$K_SET_STEP,EVENT$K_STEP]:
;  630          0756  3              BEGIN
;  631          0757  3              CMD_TYPE = EVENT$K_TYPE_STEPS;
;  632          0758  3              SUB_KIND = .DBG$GB_STP_PTR [EVENT$B_STEPPING_KIND];
;  633          0759  3              IF .SUB_KIND EQLU EVENT$K_ACC_RTRN
```

```
;  634     0760  3              THEN
;  635     0761  3                  CMD_KIND = EVENT$K_KIND_ACC
;  636     0762  3
;  637     0763  3              ELSE IF .SUB_KIND EQLU EVENT$K_EXC_EXC
;  638     0764  3              THEN
;  639     0765  3                  CMD_KIND = EVENT$K_KIND_EXC
;  640     0766  3
;  641     0767  3              ELSE
;  642     0768  3                  CMD_KIND = EVENT$K_KIND_INS;
;  643     0769  3
;  644     0770  3              END;
;  645     0771  2
;  646     0772  2          TES;
;  647     0773  2
;  648     0774  2
;  649     0775  2      ! Setup the other default values.
;  650     0776  2      !
;  651     0777  2      AFTER_COUNT = 1;
;  652     0778  2      TEMPORARY = FALSE;
;  653     0779  2      SILENT = FALSE;
;  654     0780  2      NOSILENT = FALSE;
;  655     0781  2      SOURCE = FALSE;
;  656     0782  2      NOSOURCE = FALSE;
;  657     0783  2      SYSTEM = FALSE;
;  658     0784  2      NOSYSTEM = FALSE;
;  659     0785  2      INTO = FALSE;
;  660     0786  2      OVER = FALSE;
;  661     0787  2      IF .VERB_NODE [DBG$B_VERB_COMPOSITE] EQL EVENT$K_STEP
;  662     0788  2      THEN
;  663     0789  2          SILENT = NOT .DBG$GB_STP_PTR[EVENT$V_STEPPING_NOSILENT];
;  664     0790  2
;  665     0791  2
;  666     0792  2      ! Parse the command.  If this is not a SET STEP command, meaning that it
;  667     0793  2      ! is SET BREAK, SET TRACE, SET WATCH, or STEP, we look for qualifiers with
;  668     0794  2      ! "/" preceeding.
;  669     0795  2      !
;  670     0796  2      IF .VERB_NODE [DBG$B_VERB_COMPOSITE] NEQU EVENT$K_SET_STEP
;  671     0797  2      THEN
;  672     0798  3          BEGIN
;  673     0799  3
;  674     0800  3
;  675     0801  3          ! Look for the qualifiers....
;  676     0802  3          !
;  677     0803  3          ! Parse the command according to the following syntax:
;  678     0804  3          !
;  679     0805  3          !       [ /AFTER : <n> ]
;  680     0806  3          !       [ /[NO]SILENT ]
;  681     0807  3          !       [ /TEMPORARY ]
;  682     0808  3          !       [ /READ ! /WRITE ! /MODIFY ! /EXECUTE ! /RETURN ]
;  683     0809  3          !           <address> [ , <address> ]*
;  684     0810  3          !       /EXCEPTION
;  685     0811  3          !       [ /[NO]SOURCE ! /[NO]SYSTEM ! /INTO ! /OVER ]
;  686     0812  3          !       /CALLS
;  687     0813  3          !       /RETURN
;  688     0814  3          !       /BRANCH
;  689     0815  3          !       /INSTRUCTION [ = [ <mnemonic> ! [( <mnemonic> [ , <mnemonic> ]* ) ]]
;  690     0816  3          !
```

```
;  691          0817  3          NOSILENT = TRUE;
;  692          0818  3          WHILE MATCH(DBG$CS_SLASH) DO
;  693          0819  4              BEGIN
;  694          0820  4              SELECTONE TRUE OF
;  695          0821  4                  SET
;  696          0822  4
;  697          0823  4
;  698          0824  4                  ! Parse the /AFTER : <n> qualifier.
;  699          0825  4                  !
;  700          0826  4                  [MATCH (DBG$CS_AFTER)]:
;  701          0827  5                      BEGIN
;  702          0828  5                      IF .CMD_TYPE EQLU EVENT$K_TYPE_BREAK OR
;  703          0829  5                         .CMD_TYPE EQLU EVENT$K_TYPE_TRACE OR
;  704          0830  5                         .CMD_TYPE EQLU EVENT$K_TYPE_WATCH
;  705          0831  5                      THEN
;  706          0832  6                          BEGIN
;  707          0833  6
;  708          0834  6
;  709          0835  6                          ! Match the ':'.
;  710          0836  6                          !
;  711          0837  6                          NEED_MATCH (DBG$CS_COLON);
;  712          0838  6
;  713          0839  6
;  714          0840  6                          ! Fill in the details.
;  715          0841  6                          !
;  716          0842  6                          IF NOT DBG$NSAVE_DECIMAL_INTEGER
;  717          0843  6                                 (.INPUT_DESC,
;  718          0844  6                                  AFTER_COUNT,
;  719          0845  6                                  .MESSAGE_VECT
;  720          0846  6                                 )
;  721          0847  6                          THEN
;  722          0848  6                              RETURN STS$K_SEVERE;
;  723          0849  6
;  724          0850  6                          END
;  725          0851  6
;  726          0852  5                      ELSE
;  727          0853  5                          SYNTAX_ERROR;
;  728          0854  5
;  729          0855  4                      END;
;  730          0856  4
;  731          0857  4
;  732          0858  4                  ! Parse the /TEMPORARY qualifier.
;  733          0859  4                  !
;  734          0860  4                  [MATCH (DBG$CS_TEMPORARY)]:
;  735          0861  5                      BEGIN
;  736          0862  5
;  737          0863  5
;  738          0864  5                      IF .CMD_TYPE EQLU EVENT$K_TYPE_BREAK OR
;  739          0865  5                         .CMD_TYPE EQLU EVENT$K_TYPE_TRACE OR
;  740          0866  5                         .CMD_TYPE EQLU EVENT$K_TYPE_WATCH
;  741          0867  5                      THEN
;  742          0868  6                          BEGIN
;  743          0869  6
;  744          0870  6
;  745          0871  6                          ! Fill in the details.
;  746          0872  6                          !
;  747          0873  6                          TEMPORARY = TRUE;
```

```
;  748     0874  6                END
;  749     0875  6
;  750     0876  5            ELSE
;  751     0877  5                SYNTAX_ERROR;
;  752     0878  5
;  753     0879  4            END;
;  754     0880  4
;  755     0881  4
;  756     0882  4        ! Parse the /SILENT qualifier.
;  757     0883  4        !
;  758     0884  4        [MATCH (DBG$CS_SILENT, 2)]:
;  759     0885  5            BEGIN
;  760     0886  5            SILENT = TRUE;
;  761     0887  5            NOSILENT = FALSE;
;  762     0888  4            END;
;  763     0889  4
;  764     0890  4
;  765     0891  4        ! Parse the /NOSILENT qualifier.
;  766     0892  4        !
;  767     0893  4        [MATCH (DBG$CS_NOSILENT, 4)]:
;  768     0894  5            BEGIN
;  769     0895  5            NOSILENT = TRUE;
;  770     0896  5            SILENT = FALSE;
;  771     0897  4            END;
;  772     0898  4
;  773     0899  4
;  774     0900  4        ! Parse /READ.
;  775     0901  4        !
;  776     0902  4        [MATCH (DBG$CS_READ)]:
;  777     0903  5            BEGIN
;  778     0904  5
;  779     0905  5
;  780     0906  5                ! Make sure that this is a SET BREAK or SET TRACE command,
;  781     0907  5                ! and then set the command kind to read access.
;  782     0908  5                !
;  783     0909  5                IF .CMD_TYPE EQLU EVENT$K_TYPE_BREAK OR
;  784     0910  5                   .CMD_TYPE EQLU EVENT$K_TYPE_TRACE
;  785     0911  5                THEN
;  786     0912  6                    BEGIN
;  787     0913  6                    CMD_KIND = EVENT$K_KIND_ACC;
;  788     0914  6                    SUB_KIND = EVENT$K_ACC_READ;
;  789     0915  6                    END
;  790     0916  6
;  791     0917  5                ELSE
;  792     0918  5                    SYNTAX_ERROR;
;  793     0919  4                END;
;  794     0920  4
;  795     0921  4
;  796     0922  4        ! Parse /WRITE.
;  797     0923  4        !
;  798     0924  4        [MATCH (DBG$CS_WRITE)]:
;  799     0925  5            BEGIN
;  800     0926  5
;  801     0927  5
;  802     0928  5                ! Make sure that this is a SET BREAK or SET TRACE command,
;  803     0929  5                ! and then set the command kind to write access.
;  804     0930  5                !
```

```
;  805     0931  5                IF .CMD_TYPE EQLU EVENT$K_TYPE_BREAK OR
;  806     0932  5                   .CMD_TYPE EQLU EVENT$K_TYPE_TRACE
;  807     0933  5                THEN
;  808     0934  6                    BEGIN
;  809     0935  6                    CMD_KIND = EVENT$K_KIND_ACC;
;  810     0936  6                    SUB_KIND = EVENT$K_ACC_WRIT;
;  811     0937  6                    END
;  812     0938  6
;  813     0939  5                ELSE
;  814     0940  5                    SYNTAX_ERROR;
;  815     0941  4                END;
;  816     0942  4
;  817     0943  4
;  818     0944  4            ! Parse /MODIFY.
;  819     0945  4            !
;  820     0946  4            [MATCH (DBG$CS_MODIFY)]:
;  821     0947  5                BEGIN
;  822     0948  5
;  823     0949  5
;  824     0950  5                ! Make sure that this is a SET BREAK or SET TRACE command,
;  825     0951  5                ! and then set the command kind to modify access.
;  826     0952  5                !
;  827     0953  5                IF .CMD_TYPE EQLU EVENT$K_TYPE_BREAK OR
;  828     0954  5                   .CMD_TYPE EQLU EVENT$K_TYPE_TRACE
;  829     0955  5                THEN
;  830     0956  6                    BEGIN
;  831     0957  6                    CMD_KIND = EVENT$K_KIND_ACC;
;  832     0958  6                    SUB_KIND = EVENT$K_ACC_MDFY;
;  833     0959  6                    END
;  834     0960  6
;  835     0961  5                ELSE
;  836     0962  5                    SYNTAX_ERROR;
;  837     0963  5
;  838     0964  4                END;
;  839     0965  4
;  840     0966  4
;  841     0967  4            ! Parse /EXECUTE <address> [ , <address> ]*.
;  842     0968  4            !
;  843     0969  4            [MATCH (DBG$CS_EXECUTE)]:
;  844     0970  5                BEGIN
;  845     0971  5
;  846     0972  5
;  847     0973  5                ! Make sure that this is a SET BREAK or SET TRACE command,
;  848     0974  5                ! and then set the command kind to execute access.
;  849     0975  5                !
;  850     0976  5                IF .CMD_TYPE EQLU EVENT$K_TYPE_BREAK OR
;  851     0977  5                   .CMD_TYPE EQLU EVENT$K_TYPE_TRACE
;  852     0978  5                THEN
;  853     0979  6                    BEGIN
;  854     0980  6                    CMD_KIND = EVENT$K_KIND_ACC;
;  855     0981  6                    SUB_KIND = EVENT$K_ACC_EXEC;
;  856     0982  6                    END
;  857     0983  6
;  858     0984  5                ELSE
;  859     0985  5                    SYNTAX_ERROR;
;  860     0986  5
;  861     0987  4                END;
```

```
;  862     0988  4
;  863     0989  4
;  864     0990  4                ! Parse /RETURN <address> [ , <address> ]*.
;  865     0991  4                !
;  866     0992  4                [MATCH (DBG$CS_RETURN)]:
;  867     0993  5                    BEGIN
;  868     0994  5
;  869     0995  5
;  870     0996  5                    ! Make sure that this is not a SET WATCH command,
;  871     0997  5                    ! and then set the command kind to return access.
;  872     0998  5                    !
;  873     0999  5                    IF .CMD_TYPE NEQU EVENT$K_TYPE_WATCH
;  874     1000  5                    THEN
;  875     1001  6                        BEGIN
;  876     1002  6                        CMD_KIND = EVENT$K_KIND_ACC;
;  877     1003  6                        SUB_KIND = EVENT$K_ACC_RTRN;
;  878     1004  6                        END
;  879     1005  6
;  880     1006  5                    ELSE
;  881     1007  5                        SYNTAX_ERROR;
;  882     1008  5
;  883     1009  4                    END;
;  884     1010  4
;  885     1011  4
;  886     1012  4                ! Parse /EXECEPTION.
;  887     1013  4                !
;  888     1014  4                [MATCH (DBG$CS_EXCEPTION)]:
;  889     1015  5                    BEGIN
;  890     1016  5
;  891     1017  5
;  892     1018  5                    ! Make sure that this is not a SET WATCH command,
;  893     1019  5                    ! and then set the command kind to execption.
;  894     1020  5                    !
;  895     1021  5                    IF .CMD_TYPE EQLU EVENT$K_TYPE_BREAK OR
;  896     1022  5                       .CMD_TYPE EQLU EVENT$K_TYPE_TRACE OR
;  897     1023  5                       .CMD_TYPE EQLU EVENT$K_TYPE_STEPS
;  898     1024  5                    THEN
;  899     1025  6                        BEGIN
;  900     1026  6                        CMD_KIND = EVENT$K_KIND_EXC;
;  901     1027  6                        SUB_KIND = EVENT$K_EXC_EXC;
;  902     1028  6                        END
;  903     1029  6
;  904     1030  5                    ELSE
;  905     1031  5                        SYNTAX_ERROR;
;  906     1032  5
;  907     1033  4                    END;
;  908     1034  4
;  909     1035  4
;  910     1036  4                ! Parse /SOURCE.
;  911     1037  4                !
;  912     1038  4                [MATCH (DBG$CS_SOURCE, 2)]:
;  913     1039  5                    BEGIN
;  914     1040  5                    SOURCE = TRUE;
;  915     1041  5                    NOSOURCE = FALSE;
;  916     1042  4                    END;
;  917     1043  4
;  918     1044  4
```

```
;  919          1045  4                ! Parse /NOSOURCE.
;  920          1046  4                !
;  921          1047  4                [MATCH (DBG$CS_NOSOURCE, 4)]:
;  922          1048  5                    BEGIN
;  923          1049  5                    NOSOURCE = TRUE;
;  924          1050  5                    SOURCE = FALSE;
;  925          1051  4                    END;
;  926          1052  4
;  927          1053  4
;  928          1054  4                ! Parse /SYSTEM.
;  929          1055  4                !
;  930          1056  4                [MATCH (DBG$CS_SYSTEM, 2)]:
;  931          1057  5                    BEGIN
;  932          1058  5
;  933          1059  5
;  934          1060  5                    ! Make sure that this is not a SET WATCH command,
;  935          1061  5                    ! and then set the command kind to call.
;  936          1062  5                    !
;  937          1063  5                    IF .CMD_TYPE NEQU EVENT$K_TYPE_WATCH
;  938          1064  5                    THEN
;  939          1065  6                        BEGIN
;  940          1066  6                        SYSTEM = TRUE;
;  941          1067  6                        NOSYSTEM = FALSE;
;  942          1068  6                        END
;  943          1069  6
;  944          1070  5                    ELSE
;  945          1071  5                        SYNTAX_ERROR;
;  946          1072  5
;  947          1073  4                    END;
;  948          1074  4
;  949          1075  4
;  950          1076  4                ! Parse /NOSYSTEM.
;  951          1077  4                !
;  952          1078  4                [MATCH (DBG$CS_NOSYSTEM, 4)]:
;  953          1079  5                    BEGIN
;  954          1080  5
;  955          1081  5
;  956          1082  5                    ! Make sure that this is not a SET WATCH command,
;  957          1083  5                    ! and then set the command kind to call.
;  958          1084  5                    !
;  959          1085  5                    IF .CMD_TYPE NEQU EVENT$K_TYPE_WATCH
;  960          1086  5                    THEN
;  961          1087  6                        BEGIN
;  962          1088  6                        NOSYSTEM = TRUE;
;  963          1089  6                        SYSTEM = FALSE;
;  964          1090  6                        END
;  965          1091  6
;  966          1092  5                    ELSE
;  967          1093  5                        SYNTAX_ERROR;
;  968          1094  5
;  969          1095  4                    END;
;  970          1096  4
;  971          1097  4
;  972          1098  4                ! Parse /INTO.
;  973          1099  4                !
;  974          1100  4                [MATCH (DBG$CS_INTO)]:
;  975          1101  5                    BEGIN
```

```
;  976          1102  5
;  977          1103  5
;  978          1104  5                    ! Make sure that this is not a SET WATCH command,
;  979          1105  5                    ! and then set the command kind to call.
;  980          1106  5                    !
;  981          1107  5                    IF .CMD_TYPE NEQU EVENT$K_TYPE_WATCH
;  982          1108  5                    THEN
;  983          1109  6                        BEGIN
;  984          1110  6                        INTO = TRUE;
;  985          1111  6                        OVER = FALSE;
;  986          1112  6                        END
;  987          1113  6
;  988          1114  5                    ELSE
;  989          1115  5                        SYNTAX_ERROR;
;  990          1116  4                    END;
;  991          1117  4
;  992          1118  4
;  993          1119  4                ! Parse /OVER.
;  994          1120  4                !
;  995          1121  4                [MATCH (DBG$CS_OVER)]:
;  996          1122  5                    BEGIN
;  997          1123  5
;  998          1124  5
;  999          1125  5                    ! Make sure that this is not a SET WATCH command,
; 1000          1126  5                    ! and then set the command kind to call.
; 1001          1127  5                    !
; 1002          1128  5                    IF .CMD_TYPE NEQU EVENT$K_TYPE_WATCH
; 1003          1129  5                    THEN
; 1004          1130  6                        BEGIN
; 1005          1131  6                        OVER = TRUE;
; 1006          1132  6                        INTO = FALSE;
; 1007          1133  6                        END
; 1008          1134  6
; 1009          1135  5                    ELSE
; 1010          1136  5                        SYNTAX_ERROR;
; 1011          1137  5
; 1012          1138  4                    END;
; 1013          1139  4
; 1014          1140  4
; 1015          1141  4                ! Parse /CALLS.
; 1016          1142  4                !
; 1017          1143  4                [MATCH (DBG$CS_CALL)]:
; 1018          1144  5                    BEGIN
; 1019          1145  5
; 1020          1146  5
; 1021          1147  5                    ! Make sure that this is not a SET WATCH command,
; 1022          1148  5                    ! and then set the command kind to call.
; 1023          1149  5                    !
; 1024          1150  5                    IF .CMD_TYPE NEQU EVENT$K_TYPE_WATCH
; 1025          1151  5                    THEN
; 1026          1152  6                        BEGIN
; 1027          1153  6                        CMD_KIND = EVENT$K_KIND_INS;
; 1028          1154  6                        SUB_KIND = EVENT$K_INS_CALL;
; 1029          1155  6                        END
; 1030          1156  6
; 1031          1157  5                    ELSE
; 1032          1158  5                        SYNTAX_ERROR;
```

```
;  1033          1159  5
;  1034          1160  4                    END;
;  1035          1161  4
;  1036          1162  4
;  1037          1163  4                ! Parse /BRANCH.
;  1038          1164  4                !
;  1039          1165  4                [MATCH (DBG$CS_BRANCH)]:
;  1040          1166  5                    BEGIN
;  1041          1167  5
;  1042          1168  5
;  1043          1169  5                    ! Make sure that this is not a SET WATCH command,
;  1044          1170  5                    ! and then set the command kind to branch.
;  1045          1171  5                    !
;  1046          1172  5                    IF .CMD_TYPE NEQU EVENT$K_TYPE_WATCH
;  1047          1173  5                    THEN
;  1048          1174  6                        BEGIN
;  1049          1175  6                        CMD_KIND = EVENT$K_KIND_INS;
;  1050          1176  6                        SUB_KIND = EVENT$K_INS_BRAN;
;  1051          1177  6                        END
;  1052          1178  6
;  1053          1179  5                    ELSE
;  1054          1180  5                        SYNTAX_ERROR;
;  1055          1181  5
;  1056          1182  4                    END;
;  1057          1183  4
;  1058          1184  4
;  1059          1185  4                ! Parse /LINE.
;  1060          1186  4                !
;  1061          1187  4                [MATCH (DBG$CS_LINE)]:
;  1062          1188  5                    BEGIN
;  1063          1189  5
;  1064          1190  5
;  1065          1191  5                    ! Make sure that this is not a SET WATCH command,
;  1066          1192  5                    ! and then set the command kind to line.
;  1067          1193  5                    !
;  1068          1194  5                    IF .CMD_TYPE NEQU EVENT$K_TYPE_WATCH
;  1069          1195  5                    THEN
;  1070          1196  6                        BEGIN
;  1071          1197  6                        CMD_KIND = EVENT$K_KIND_INS;
;  1072          1198  6                        SUB_KIND = EVENT$K_INS_LINE;
;  1073          1199  6                        END
;  1074          1200  6
;  1075          1201  5                    ELSE
;  1076          1202  5                        SYNTAX_ERROR;
;  1077          1203  5
;  1078          1204  4                    END;
;  1079          1205  4
;  1080          1206  4
;  1081          1207  4                ! Parse /INSTRUCTION
;  1082          1208  4                !           [ = [ <mnemonic> ! ( <mnemonic> [ , <mnemonic> ]* ) ]].
;  1083          1209  4                !
;  1084          1210  4                [MATCH (DBG$CS_INSTRUCTION)]:
;  1085          1211  5                    BEGIN
;  1086          1212  5
;  1087          1213  5
;  1088          1214  5                    ! Make sure that this is not a SET WATCH command,
;  1089          1215  5                    ! and then set the command kind to instruction.
```

```
;  1090          1216  5                !
;  1091          1217  5                IF .CMD_TYPE NEQU EVENT$K_TYPE_WATCH
;  1092          1218  5                THEN
;  1093          1219  6                    BEGIN
;  1094          1220  6                    CMD_KIND = EVENT$K_KIND_INS;
;  1095          1221  6                    SUB_KIND = EVENT$K_INS_EVRY;
;  1096          1222  6
;  1097          1223  6                    ! Look for a possible '='.
;  1098          1224  6                    !
;  1099          1225  6                    IF MATCH (DBG$CS_EQUALS)
;  1100          1226  7                    THEN
;  1101          1227  6                        BEGIN
;  1102          1228  7
;  1103          1229  7                        ! Set the kind to user defined instead of every.
;  1104          1230  7                        !
;  1105          1231  7                        SUB_KIND = EVENT$K_INS_USER;
;  1106          1232  7
;  1107          1233  7                        ! Collect mnemonic(s).
;  1108          1234  7                        !
;  1109          1235  7                        IF MATCH (DBG$CS_L_PAREN)
;  1110          1236  7                        THEN
;  1111          1237  8
;  1112          1238  7                            ! Collect mnemonic(s) and build an noun list.
;  1113          1239  7                            !
;  1114          1240  7                            BEGIN
;  1115          1241  7                            DO
;  1116          1242  7                                BEGIN
;  1117          1243  8
;  1118          1244  8                                ! Get a noun node for a <mnemonic>.
;  1119          1245  9                                !
;  1120          1246  9                                GET_NOUN_NODE;
;  1121          1247  9
;  1122          1248  9                                NOUN_NODE [DBG$L_NOUN_VALUE] =
;  1123          1249  9                                    DBG$OPCODE_INDEX(.INPUT_DESC);
;  1124          1250  9
;  1125          1251  9                                END
;  1126          1252  9                            WHILE (MATCH (DBG$CS_COMMA));
;  1127          1253  9
;  1128          1254  9                            ! Match the ')'.
;  1129          1255  9                            !
;  1130          1256  8                            NEED_MATCH (DBG$CS_R_PAREN);
;  1131          1257  8                            END
;  1132          1258  8
;  1133          1259  8                    ELSE
;  1134          1260  8                        BEGIN
;  1135          1261  8
;  1136          1262  8                        ! Get a noun node for a <mnemonic>.
;  1137          1263  8                        !
;  1138          1264  7                        GET_NOUN_NODE;
;  1139          1265  8                        NOUN_NODE [DBG$L_NOUN_VALUE] =
;  1140          1266  8                            DBG$OPCODE_INDEX(.INPUT_DESC);
;  1141          1267  8
;  1142          1268  8
;  1143          1269  8
;  1144          1270  8
;  1145          1271  8
;  1146          1272  8
```

```
;  1147          1273  7                        END;
;  1148          1274  7
;  1149          1275  6                    END;
;  1150          1276  6
;  1151          1277  6                END
;  1152          1278  6
;  1153          1279  5            ELSE
;  1154          1280  5                SYNTAX_ERROR;
;  1155          1281  5
;  1156          1282  4                END;
;  1157          1283  4
;  1158          1284  4
;  1159          1285  4            ! Check for ambiguous cases.
;  1160          1286  4            !
;  1161          1287  4            [MATCH(UPLIT BYTE(%ASCIC 'S'))]:
;  1162          1288  4                SIGNAL(DBG$_AMBIGQUAL, 1, UPLIT BYTE(%ASCIC 'S'));
;  1163          1289  4
;  1164          1290  4            [MATCH(UPLIT BYTE(%ASCIC 'NOS'), 3)]:
;  1165          1291  4                SIGNAL(DBG$_AMBIGQUAL, 1, UPLIT BYTE(%ASCIC 'NOS'));
;  1166          1292  4
;  1167          1293  4
;  1168          1294  4            ! Otherwise, we've got an undefined qualifier....
;  1169          1295  4            !
;  1170          1296  4            [OTHERWISE]:
;  1171          1297  4                SYNTAX_ERROR;
;  1172          1298  4
;  1173          1299  4            TES;
;  1174          1300  4
;  1175          1301  3        END;                        ! End of WHILE loop over qualifiers
;  1176          1302  3
;  1177          1303  3        END                         ! End of non-SET STEP command parse
;  1178          1304  3
;  1179          1305  3
;  1180          1306  3        ! Handle the SET STEP command qualifiers.
;  1181          1307  3        !
;  1182          1308  2        ELSE
;  1183          1309  3            BEGIN
;  1184          1310  3
;  1185          1311  3
;  1186          1312  3            ! Parse the SET STEP command according to the following syntax:
;  1187          1313  3            !
;  1188          1314  3            !       [ [NO]SILENT ]
;  1189          1315  3            !       [ [NO]SOURCE ! [NO]SYSTEM ! INTO ! OVER ]
;  1190          1316  3            !       CALLS
;  1191          1317  3            !       RETURN
;  1192          1318  3            !       BRANCH
;  1193          1319  3            !       INSTRUCTION [ = [ <mnemonic> ! [( <mnemonic> [ , <mnemonic> ]* ) ]]
;  1194          1320  3            !
;  1195          1321  3            DO
;  1196          1322  4                BEGIN
;  1197          1323  4                SELECTONE TRUE OF
;  1198          1324  4                    SET
;  1199          1325  4
;  1200          1326  4                    ! Parse RETURN
;  1201          1327  4                    !
;  1202          1328  4                    [MATCH (DBG$CS_RETURN)]:
;  1203          1329  4
```

```
;  1204          1330  5                BEGIN
;  1205          1331  5                CMD_KIND = EVENT$K_KIND_ACC;
;  1206          1332  5                SUB_KIND = EVENT$K_ACC_RTRN;
;  1207          1333  4                END;
;  1208          1334  4
;  1209          1335  4
;  1210          1336  4            ! Parse SOURCE.
;  1211          1337  4            !
;  1212          1338  4            [MATCH (DBG$CS_SOURCE, 2)]:
;  1213          1339  5                BEGIN
;  1214          1340  5                SOURCE = TRUE;
;  1215          1341  5                NOSOURCE = FALSE;
;  1216          1342  4                END;
;  1217          1343  4
;  1218          1344  4
;  1219          1345  4            ! Parse NOSOURCE.
;  1220          1346  4            !
;  1221          1347  4            [MATCH (DBG$CS_NOSOURCE, 4)]:
;  1222          1348  5                BEGIN
;  1223          1349  5                NOSOURCE = TRUE;
;  1224          1350  5                SOURCE = FALSE;
;  1225          1351  4                END;
;  1226          1352  4
;  1227          1353  4
;  1228          1354  4            ! Parse SYSTEM.
;  1229          1355  4            !
;  1230          1356  4            [MATCH (DBG$CS_SYSTEM, 2)]:
;  1231          1357  5                BEGIN
;  1232          1358  5                SYSTEM = TRUE;
;  1233          1359  5                NOSYSTEM = FALSE;
;  1234          1360  4                END;
;  1235          1361  4
;  1236          1362  4
;  1237          1363  4            ! Parse NOSYSTEM.
;  1238          1364  4            !
;  1239          1365  4            [MATCH (DBG$CS_NOSYSTEM, 4)]:
;  1240          1366  5                BEGIN
;  1241          1367  5                NOSYSTEM = TRUE;
;  1242          1368  5                SYSTEM = FALSE;
;  1243          1369  4                END;
;  1244          1370  4
;  1245          1371  4
;  1246          1372  4            ! Parse SILENT.
;  1247          1373  4            !
;  1248          1374  4            [MATCH (DBG$CS_SILENT, 2)]:
;  1249          1375  5                BEGIN
;  1250          1376  5                SILENT = TRUE;
;  1251          1377  5                NOSILENT = FALSE;
;  1252          1378  4                END;
;  1253          1379  4
;  1254          1380  4
;  1255          1381  4            ! Parse NOSILENT.
;  1256          1382  4            !
;  1257          1383  4            [MATCH (DBG$CS_NOSILENT, 4)]:
;  1258          1384  5                BEGIN
;  1259          1385  5                SILENT = FALSE;
;  1260          1386  5                NOSILENT = TRUE;
```

```
;  1261          1387  4                    END;
;  1262          1388  4
;  1263          1389  4
;  1264          1390  4                ! Parse INTO.
;  1265          1391  4                !
;  1266          1392  4                [MATCH (DBG$CS_INTO)]:
;  1267          1393  5                    BEGIN
;  1268          1394  5                    INTO = TRUE;
;  1269          1395  5                    OVER = FALSE;
;  1270          1396  4                    END;
;  1271          1397  4
;  1272          1398  4
;  1273          1399  4                ! Parse OVER.
;  1274          1400  4                !
;  1275          1401  4                [MATCH (DBG$CS_OVER)]:
;  1276          1402  5                    BEGIN
;  1277          1403  5                    OVER = TRUE;
;  1278          1404  5                    INTO = FALSE;
;  1279          1405  4                    END;
;  1280          1406  4
;  1281          1407  4
;  1282          1408  4                ! Parse CALLS.
;  1283          1409  4                !
;  1284          1410  4                [MATCH (DBG$CS_CALL)]:
;  1285          1411  5                    BEGIN
;  1286          1412  5                    CMD_KIND = EVENT$K_KIND_INS;
;  1287          1413  5                    SUB_KIND = EVENT$K_INS_CALL;
;  1288          1414  4                    END;
;  1289          1415  4
;  1290          1416  4
;  1291          1417  4                ! Parse BRANCH.
;  1292          1418  4                !
;  1293          1419  4                [MATCH (DBG$CS_BRANCH)]:
;  1294          1420  5                    BEGIN
;  1295          1421  5                    CMD_KIND = EVENT$K_KIND_INS;
;  1296          1422  5                    SUB_KIND = EVENT$K_INS_BRAN;
;  1297          1423  4                    END;
;  1298          1424  4
;  1299          1425  4
;  1300          1426  4                ! Parse EXCEPTION
;  1301          1427  4                !
;  1302          1428  4                [MATCH (DBG$CS_EXCEPTION)]:
;  1303          1429  5                    BEGIN
;  1304          1430  5                    CMD_KIND = EVENT$K_KIND_EXC;
;  1305          1431  5                    SUB_KIND = EVENT$K_EXC_EXC;
;  1306          1432  4                    END;
;  1307          1433  4
;  1308          1434  4
;  1309          1435  4                ! Parse LINE.
;  1310          1436  4                !
;  1311          1437  4                [MATCH (DBG$CS_LINE)]:
;  1312          1438  5                    BEGIN
;  1313          1439  5                    CMD_KIND = EVENT$K_KIND_INS;
;  1314          1440  5                    SUB_KIND = EVENT$K_INS_LINE;
;  1315          1441  4                    END;
;  1316          1442  4
;  1317          1443  4
```

```
;  1318          1444  4          ! Parse INSTRUCTION
;  1319          1445  4          !           [ = [ <mnemonic> ! ( <mnemonic> [ , <mnemonic> ]* ) ]].
;  1320          1446  4          !
;  1321          1447  4          [MATCH (DBG$CS_INSTRUCTION)]:
;  1322          1448  5              BEGIN
;  1323          1449  5              CMD_KIND = EVENT$K_KIND_INS;
;  1324          1450  5              SUB_KIND = EVENT$K_INS_EVRY;
;  1325          1451  5
;  1326          1452  5
;  1327          1453  5              ! Look for a possible '='.
;  1328          1454  5              !
;  1329          1455  6              IF MATCH (DBG$CS_EQUALS)
;  1330          1456  5              THEN
;  1331          1457  6                  BEGIN
;  1332          1458  6
;  1333          1459  6                  ! Set the kind to user defined instead of every.
;  1334          1460  6                  !
;  1335          1461  6                  SUB_KIND = EVENT$K_INS_USER;
;  1336          1462  6
;  1337          1463  6                  ! Collect mnemonic(s).
;  1338          1464  6                  !
;  1339          1465  7                  IF MATCH (DBG$CS_L_PAREN)
;  1340          1466  6                  THEN
;  1341          1467  6
;  1342          1468  6                      ! Collect mnemonic(s) and build an noun list.
;  1343          1469  6                      !
;  1344          1470  7                      BEGIN
;  1345          1471  7                      DO
;  1346          1472  8                          BEGIN
;  1347          1473  8
;  1348          1474  8                          ! Get a noun node for a <mnemonic>.
;  1349          1475  8                          !
;  1350          1476  8                          GET_NOUN_NODE;
;  1351          1477  8
;  1352          1478  8                          NOUN_NODE [DBG$L_NOUN_VALUE] =
;  1353          1479  8                              DBG$OPCODE_INDEX(.INPUT_DESC);
;  1354          1480  8
;  1355          1481  8                          END
;  1356          1482  7                      WHILE (MATCH (DBG$CS_COMMA));
;  1357          1483  7
;  1358          1484  7
;  1359          1485  7                      ! Match the ')'.
;  1360          1486  7                      !
;  1361          1487  7                      NEED_MATCH (DBG$CS_R_PAREN);
;  1362          1488  7                      END
;  1363          1489  7
;  1364          1490  6                  ELSE
;  1365          1491  7                      BEGIN
;  1366          1492  7
;  1367          1493  7                      ! Get a noun node for a <mnemonic>.
;  1368          1494  7                      !
;  1369          1495  7                      GET_NOUN_NODE;
;  1370          1496  7                      NOUN_NODE [DBG$L_NOUN_VALUE] =
;  1371          1497  7                          DBG$OPCODE_INDEX(.INPUT_DESC);
;  1372          1498  6                      END;
;  1373          1499  6
;  1374          1500  5              END;
```

```
;  1375          1501  5
;  1376          1502  4                    END;
;  1377          1503  4
;  1378          1504  4
;  1379          1505  4                ! Check for ambiguous cases.
;  1380          1506  4                !
;  1381          1507  4                [MATCH(UPLIT BYTE(%ASCIC 'S'))]:
;  1382          1508  4                    SIGNAL(DBG$_AMBIGQUAL, 1, UPLIT BYTE(%ASCIC 'S'));
;  1383          1509  4
;  1384          1510  4                [MATCH(UPLIT BYTE(%ASCIC 'NOS'), 3)]:
;  1385          1511  4                    SIGNAL(DBG$_AMBIGQUAL, 1, UPLIT BYTE(%ASCIC 'NOS'));
;  1386          1512  4
;  1387          1513  4
;  1388          1514  4                ! Otherwise, we've got an undefined qualifier (or something).
;  1389          1515  4                !
;  1390          1516  4                [OTHERWISE]:
;  1391          1517  4                    SYNTAX_ERROR;
;  1392          1518  4
;  1393          1519  4                TES;
;  1394          1520  4
;  1395          1521  4            END
;  1396          1522  4
;  1397          1523  3        WHILE (MATCH (DBG$CS_COMMA));
;  1398          1524  3
;  1399          1525  2        END;                            ! End of SET STEP qualifier parsing
;  1400          1526  2
;  1401          1527  2
;  1402          1528  2    ! Build up the adverb list based on what we've got so far.
;  1403          1529  2    ! Note that if we've reached this point, we should have
;  1404          1530  2    ! all qualifiers done, and the working variables reflect
;  1405          1531  2    ! the command desired.
;  1406          1532  2    !
;  1407          1533  2    ! Set up the command kind and possibly the sub-kind adverbs.
;  1408          1534  2    !
;  1409          1535  2    GET_ADVERB_NODE;
;  1410          1536  2    SELECTONE .CMD_KIND OF
;  1411          1537  2        SET
;  1412          1538  2        [EVENT$K_KIND_ACC]:
;  1413          1539  2            ADVERB_NODE [DBG$B_ADVERB_LITERAL] =
;  1414          1540  3            (SELECTONE .SUB_KIND OF
;  1415          1541  3                SET
;  1416          1542  3                [EVENT$K_ACC_READ]:
;  1417          1543  3                    ADVERB_READ;
;  1418          1544  3                [EVENT$K_ACC_WRIT]:
;  1419          1545  3                    ADVERB_WRITE;
;  1420          1546  3                [EVENT$K_ACC_MDFY]:
;  1421          1547  3                    ADVERB_MODIFY;
;  1422          1548  3                [EVENT$K_ACC_EXEC]:
;  1423          1549  3                    ADVERB_EXECUTE;
;  1424          1550  3                [EVENT$K_ACC_RTRN]:
;  1425          1551  3                    ADVERB_RETURN;
;  1426          1552  3                TES
;  1427          1553  2            );
;  1428          1554  2
;  1429          1555  2
;  1430          1556  2        [EVENT$K_KIND_EXC]:
;  1431          1557  2            ADVERB_NODE [DBG$B_ADVERB_LITERAL] = ADVERB_EXCEPTION;
```

```
;  1432          1558  2
;  1433          1559  2
;  1434          1560  2          [EVENT$K_KIND_INS]:
;  1435          1561  2              ADVERB_NODE [DBG$B_ADVERB_LITERAL] =
;  1436          1562  3              (SELECTONE .SUB_KIND OF
;  1437          1563  3                  SET
;  1438          1564  3                  [EVENT$K_INS_CALL]:
;  1439          1565  3                      ADVERB_CALL;
;  1440          1566  3                  [EVENT$K_INS_BRAN]:
;  1441          1567  3                      ADVERB_BRANCH;
;  1442          1568  3                  [EVENT$K_INS_EVRY]:
;  1443          1569  3                      ADVERB_INSTRUCTION;
;  1444          1570  3                  [EVENT$K_INS_USER]:
;  1445          1571  3                      ADVERB_OPCODE;
;  1446          1572  3                  [EVENT$K_INS_LINE]:
;  1447          1573  3                      ADVERB_LINE;
;  1448          1574  3                  TES
;  1449          1575  2              );
;  1450          1576  2
;  1451          1577  2          TES;
;  1452          1578  2
;  1453          1579  2
;  1454          1580  2      ! If the /AFTER, /UNTIL, and /EVERY are not at their defaults,
;  1455          1581  2      ! setup an adverb node for the problem boys.
;  1456          1582  2      !
;  1457          1583  2      IF .AFTER_COUNT NEQU 1
;  1458          1584  2      THEN
;  1459          1585  3          BEGIN
;  1460          1586  3          GET_ADVERB_NODE;
;  1461          1587  3
;  1462          1588  3
;  1463          1589  3          ! If the /AFTER count is 0, then this is really a kludge ah, I
;  1464          1590  3          ! mean /TEMPORARY.
;  1465          1591  3          !
;  1466          1592  3          IF .AFTER_COUNT EQLU 0
;  1467          1593  3          THEN
;  1468          1594  3              ADVERB_NODE [DBG$B_ADVERB_LITERAL] = ADVERB_TEMPORARY
;  1469          1595  3          ELSE
;  1470          1596  4              BEGIN
;  1471          1597  4              ADVERB_NODE [DBG$B_ADVERB_LITERAL] = ADVERB_AFTER;
;  1472          1598  4              ADVERB_NODE [DBG$L_ADVERB_VALUE] = .AFTER_COUNT;
;  1473          1599  3              END;
;  1474          1600  2          END;
;  1475          1601  2
;  1476          1602  2
;  1477          1603  2      ! If the /SILENT or /NOSILENT qualifier is present, make an Adverb Node
;  1478          1604  2      ! for whichever one was specified last.
;  1479          1605  2      !
;  1480          1606  2      IF .SILENT
;  1481          1607  2      THEN
;  1482          1608  3          BEGIN
;  1483          1609  3          GET_ADVERB_NODE;
;  1484          1610  3          ADVERB_NODE [DBG$B_ADVERB_LITERAL] = ADVERB_SILENT;
;  1485          1611  3          END
;  1486          1612  3
;  1487          1613  2      ELSE IF .NOSILENT
;  1488          1614  2      THEN
```

```
;  1489          1615  3          BEGIN
;  1490          1616  3          GET_ADVERB_NODE;
;  1491          1617  3          ADVERB_NODE [DBG$B_ADVERB_LITERAL] = ADVERB_NOSILENT;
;  1492          1618  2          END;
;  1493          1619  2
;  1494          1620  2
;  1495          1621  2      ! If the /TEMPORARY qualifier is present, make an Adverb Node for it.
;  1496          1622  2      !
;  1497          1623  2      IF .TEMPORARY
;  1498          1624  2      THEN
;  1499          1625  3          BEGIN
;  1500          1626  3          GET_ADVERB_NODE;
;  1501          1627  3          ADVERB_NODE [DBG$B_ADVERB_LITERAL] = ADVERB_TEMPORARY;
;  1502          1628  2          END;
;  1503          1629  2
;  1504          1630  2
;  1505          1631  2      ! If the /SOURCE or /NOSOURCE qualifier was present, make an Adverb Node
;  1506          1632  2      ! for it.
;  1507          1633  2      !
;  1508          1634  2      IF .SOURCE
;  1509          1635  2      THEN
;  1510          1636  3          BEGIN
;  1511          1637  3          GET_ADVERB_NODE;
;  1512          1638  3          ADVERB_NODE [DBG$B_ADVERB_LITERAL] = ADVERB_SOURCE;
;  1513          1639  2          END;
;  1514          1640  2
;  1515          1641  2      IF .NOSOURCE
;  1516          1642  2      THEN
;  1517          1643  3          BEGIN
;  1518          1644  3          GET_ADVERB_NODE;
;  1519          1645  3          ADVERB_NODE [DBG$B_ADVERB_LITERAL] = ADVERB_NOSOURCE;
;  1520          1646  2          END;
;  1521          1647  2
;  1522          1648  2
;  1523          1649  2      ! Handle /[NO]SYSTEM's, /INTO's or /OVER's.
;  1524          1650  2      !
;  1525          1651  2      IF .CMD_KIND EQLU EVENT$K_KIND_INS OR
;  1526          1652  3         (.CMD_KIND EQLU EVENT$K_KIND_ACC AND
;  1527          1653  3          .SUB_KIND EQLU EVENT$K_ACC_RTRN)
;  1528          1654  2      THEN
;  1529          1655  3          BEGIN
;  1530          1656  3          IF .SYSTEM
;  1531          1657  3          THEN
;  1532          1658  4              BEGIN
;  1533          1659  4              GET_ADVERB_NODE;
;  1534          1660  4              ADVERB_NODE [DBG$B_ADVERB_LITERAL] = ADVERB_SYSTEM;
;  1535          1661  3              END;
;  1536          1662  3
;  1537          1663  3          IF .NOSYSTEM
;  1538          1664  3          THEN
;  1539          1665  4              BEGIN
;  1540          1666  4              GET_ADVERB_NODE;
;  1541          1667  4              ADVERB_NODE [DBG$B_ADVERB_LITERAL] = ADVERB_NOSYSTEM;
;  1542          1668  3              END;
;  1543          1669  3
;  1544          1670  3          IF .INTO
;  1545          1671  3          THEN
```

```
;  1546          1672  4              BEGIN
;  1547          1673  4              GET_ADVERB_NODE;
;  1548          1674  4              ADVERB_NODE [DBG$B_ADVERB_LITERAL] = ADVERB_INTO;
;  1549          1675  3              END;
;  1550          1676  3
;  1551          1677  3          IF .OVER
;  1552          1678  3          THEN
;  1553          1679  4              BEGIN
;  1554          1680  4              GET_ADVERB_NODE;
;  1555          1681  4              ADVERB_NODE [DBG$B_ADVERB_LITERAL] = ADVERB_OVER;
;  1556          1682  3              END;
;  1557          1683  3
;  1558          1684  2          END;
;  1559          1685  2
;  1560          1686  2
;  1561          1687  2      ! If the command kind is an access kind, get the <address> [ , <address> ]*
;  1562          1688  2      ! as long as an <address> is terminated with a ','.
;  1563          1689  2      !
;  1564          1690  2      IF .CMD_TYPE NEQU EVENT$K_TYPE_STEPS AND
;  1565          1691  2         .CMD_KIND EQLU EVENT$K_KIND_ACC
;  1566          1692  2      THEN
;  1567          1693  3          BEGIN
;  1568          1694  3          DO
;  1569          1695  4              BEGIN
;  1570          1696  4
;  1571          1697  4
;  1572          1698  4              ! Get a noun node for an <address>.
;  1573          1699  4              !
;  1574          1700  4              GET_NOUN_NODE;
;  1575          1701  4
;  1576          1702  4
;  1577          1703  4              ! Get an <address> - the is a status warning
;  1578          1704  4              ! if more is on the line. Surrounding this call, we
;  1579          1705  4              ! turn on a flag saying we are picking up the address in
;  1580          1706  4              ! a set break command. This is used in DBGPARSER to
;  1581          1707  4              ! resolve potential ambiguities in SET BRE . DO (command)
;  1582          1708  4              !
;  1583          1709  4              DBG$GB_SET_BREAK_FLAG = TRUE;
;  1584          1710  4              STATUS = DBG$NPARSE_ADDRESS(.INPUT_DESC,
;  1585          1711  4                           NOUN_NODE [DBG$L_NOUN_VALUE],
;  1586          1712  4                           .DBG$GB_RADIX[DBG$B_RADIX_INPUT],
;  1587          1713  4                           TOKEN$K_TERM_CMWHDO, .MESSAGE_VECT);
;  1588          1714  4              DBG$GB_SET_BREAK_FLAG = FALSE;
;  1589          1715  4
;  1590          1716  4
;  1591          1717  4              ! If the status indicates success, there is no
;  1592          1718  4              ! more on the line, and we exit this loop.
;  1593          1719  4              !
;  1594          1720  4              IF .STATUS EQLU STS$K_SUCCESS
;  1595          1721  4              THEN
;  1596          1722  4                  EXITLOOP;
;  1597          1723  4
;  1598          1724  4
;  1599          1725  4              ! If the status is not a warning, something is
;  1600          1726  4              ! wrong, so return with a failure.
;  1601          1727  4              !
;  1602          1728  4              IF .STATUS NEQU STS$K_WARNING
```

```
;  1603          1729  4              THEN
;  1604          1730  4                  RETURN .STATUS
;  1605          1731  4
;  1606          1732  4              END
;  1607          1733  3          WHILE (MATCH (DBG$CS_COMMA));
;  1608          1734  3
;  1609          1735  2          END;
;  1610          1736  2
;  1611          1737  2
;  1612          1738  2      ! Check the input for a <cr> after parsing <address> [ , <address> ]*
;  1613          1739  2      ! or <mnemonic> [ , <mnemonic> ].  If there's nothing left on the
;  1614          1740  2      ! line we can leave.
;  1615          1741  2      !
;  1616          1742  3      IF MATCH (DBG$CS_CR)
;  1617          1743  2      THEN RETURN STS$K_SUCCESS;
;  1618          1744  2
;  1619          1745  2
;  1620          1746  2      ! We didn't match a <cr>, there's more on the line.  If this is a STEP
;  1621          1747  2      ! command, get the step count....
;  1622          1748  2      !
;  1623          1749  2      IF .CMD_TYPE EQLU EVENT$K_TYPE_STEPS
;  1624          1750  2      THEN
;  1625          1751  2          IF .VERB_NODE [DBG$B_VERB_COMPOSITE] EQLU EVENT$K_STEP
;  1626          1752  2          THEN
;  1627          1753  3              BEGIN
;  1628          1754  3
;  1629          1755  3
;  1630          1756  3              ! Get an adverb node for a <step count>.
;  1631          1757  3              !
;  1632          1758  3              GET_ADVERB_NODE;
;  1633          1759  3
;  1634          1760  3
;  1635          1761  3              ! Get a <step count> - there is a status warning
;  1636          1762  3              ! if more is on the line.
;  1637          1763  3              !
;  1638          1764  3              ! Fill in the details.
;  1639          1765  3              !
;  1640          1766  3              ADVERB_NODE [DBG$B_ADVERB_LITERAL] = ADVERB_AFTER;
;  1641          1767  3              IF NOT DBG$NSAVE_DECIMAL_INTEGER
;  1642          1768  3                     (.INPUT_DESC,
;  1643          1769  3                      ADVERB_NODE [DBG$L_ADVERB_VALUE],
;  1644          1770  3                      .MESSAGE_VECT
;  1645          1771  3                     )
;  1646          1772  3              THEN
;  1647          1773  3                  RETURN STS$K_SEVERE
;  1648          1774  3              ELSE
;  1649          1775  3                  RETURN STS$K_SUCCESS;
;  1650          1776  3              END
;  1651          1777  2          ELSE
;  1652          1778  2              SYNTAX_ERROR;
;  1653          1779  2
;  1654          1780  2
;  1655          1781  2      ! This isn't a STEP command, but there's more on the line - maybe
;  1656          1782  2      ! a WHEN or a DO....
;  1657          1783  2      !
;  1658          1784  2      ! Parse a possible WHEN (<expression>).
;  1659          1785  2      !
```

```
;  1660          1786  3      IF MATCH (DBG$CS_WHEN)
;  1661          1787  2      THEN
;  1662          1788  3          BEGIN
;  1663          1789  3
;  1664          1790  3
;  1665          1791  3          ! Match the '('.
;  1666          1792  3          !
;  1667          1793  3          NEED_MATCH (DBG$CS_L_PAREN);
;  1668          1794  3
;  1669          1795  3
;  1670          1796  3          ! Get a new adverb node for the conditional expression.
;  1671          1797  3          !
;  1672          1798  3          GET_ADVERB_NODE;
;  1673          1799  3
;  1674          1800  3
;  1675          1801  3          ! Flag a 'WHEN' and save the <expression>.
;  1676          1802  3          !
;  1677          1803  3          ADVERB_NODE [DBG$B_ADVERB_LITERAL] = ADVERB_WHEN;
;  1678          1804  3          DBG$NSAVE_BREAK_BUFFER (.INPUT_DESC, ADVERB_NODE [DBG$L_ADVERB_VALUE]);
;  1679          1805  2          END;
;  1680          1806  2
;  1681          1807  2
;  1682          1808  2      ! Parse a Possible DO <command list>.
;  1683          1809  2      !
;  1684          1810  3      IF MATCH (DBG$CS_DO)
;  1685          1811  2      THEN
;  1686          1812  3          BEGIN
;  1687          1813  3
;  1688          1814  3
;  1689          1815  3          ! Match the '('.
;  1690          1816  3          !
;  1691          1817  3          NEED_MATCH (DBG$CS_L_PAREN);
;  1692          1818  3
;  1693          1819  3
;  1694          1820  3          ! Get a new adverb node for the command list.
;  1695          1821  3          !
;  1696          1822  3          GET_ADVERB_NODE;
;  1697          1823  3
;  1698          1824  3
;  1699          1825  3          ! Flag a 'DO' and save the <command list>.
;  1700          1826  3          !
;  1701          1827  3          ADVERB_NODE [DBG$B_ADVERB_LITERAL] = ADVERB_DO;
;  1702          1828  3          DBG$NSAVE_BREAK_BUFFER (.INPUT_DESC, ADVERB_NODE [DBG$L_ADVERB_VALUE]);
;  1703          1829  3          RETURN STS$K_SUCCESS;
;  1704          1830  2          END;
;  1705          1831  2
;  1706          1832  2
;  1707          1833  2      ! If there's more on the line, it's nothing we recognise.  Signal
;  1708          1834  2      ! a syntax error.
;  1709          1835  2      !
;  1710          1836  2      IF MATCH (DBG$CS_CR) THEN RETURN STS$K_SUCCESS;
;  1711          1837  2      .MESSAGE_VECT = DBG$NSYNTAX_ERROR (DBG$NNEXT_WORD (.INPUT_DESC));
;  1712          1838  2      RETURN STS$K_SEVERE;
;  1713          1839  1      END;
```

```
                                                        .PSECT  DBG$PLIT,NOWRT,  SHR,  PIC,0

                                                52 45 54 46 41 05  00000 P.AAA:  .ASCII  <5>\AFTER\
                                             59 52 41 52 4F 50 4D 45 54 09  00006 P.AAB:  .ASCII  <9>\TEMPORARY\
                                                   54 4E 45 4C 49 53 06  00010 P.AAC:  .ASCII  <6>\SILENT\
                                                54 4E 45 4C 49 53 4F 4E 08  00017 P.AAD:  .ASCII  <8>\NOSILENT\
                                                      4E 45 48 57 04  00020 P.AAE:  .ASCII  <4>\WHEN\
                                                            4F 44 02  00025 P.AAF:  .ASCII  <2>\DO\
                                                      44 41 45 52 04  00028 P.AAG:  .ASCII  <4>\READ\
                                                   45 54 49 52 57 05  0002D P.AAH:  .ASCII  <5>\WRITE\
                                                59 46 49 44 4F 4D 06  00033 P.AAI:  .ASCII  <6>\MODIFY\
                                                45 54 55 43 45 58 45 07  0003A P.AAJ:  .ASCII  <7>\EXECUTE\
                                                   4E 52 55 54 45 52 06  00042 P.AAK:  .ASCII  <6>\RETURN\
                                                   45 43 52 55 4F 53 06  00049 P.AAL:  .ASCII  <6>\SOURCE\
                                                45 43 52 55 4F 53 4F 4E 08  00050 P.AAM:  .ASCII  <8>\NOSOURCE\
                                                   4D 45 54 53 59 53 06  00059 P.AAN:  .ASCII  <6>\SYSTEM\
                                                4D 45 54 53 59 53 4F 4E 08  00060 P.AAO:  .ASCII  <8>\NOSYSTEM\
                                                      4F 54 4E 49 04  00069 P.AAP:  .ASCII  <4>\INTO\
                                                      52 45 56 4F 04  0006E P.AAQ:  .ASCII  <4>\OVER\
                                             4E 4F 49 54 50 45 43 58 45 09  00073 P.AAR:  .ASCII  <9>\EXCEPTION\
                                                   53 4C 4C 41 43 05  0007D P.AAS:  .ASCII  <5>\CALLS\
                                                48 43 4E 41 52 42 06  00083 P.AAT:  .ASCII  <6>\BRANCH\
                                                      45 4E 49 4C 04  0008A P.AAU:  .ASCII  <4>\LINE\
                                          4E 4F 49 54 43 55 52 54 53 4E 49 0B  0008F P.AAV:  .ASCII  <11>\INSTRUCTION\
                                                                  3D 01  0009B P.AAW:  .ASCII  <1>\=\
                                                                  28 01  0009D P.AAX:  .ASCII  <1>\(\
                                                                  29 01  0009F P.AAY:  .ASCII  <1>\)\
                                                                  2C 01  000A1 P.AAZ:  .ASCII  <1>\,\
                                                                  2F 01  000A3 P.ABA:  .ASCII  <1>\/\
                                                                  3A 01  000A5 P.ABB:  .ASCII  <1>\:\
                                                                  0D 01  000A7 P.ABC:  .BYTE   1, 13
                                                                  53 01  000A9 P.ABD:  .ASCII  <1>\S\
                                                                  53 01  000AB P.ABE:  .ASCII  <1>\S\
                                                   53 4F 4E 03  000AD P.ABF:  .ASCII  <3>\NOS\
                                                   53 4F 4E 03  000B1 P.ABG:  .ASCII  <3>\NOS\
                                                                  53 01  000B5 P.ABH:  .ASCII  <1>\S\
                                                                  53 01  000B7 P.ABI:  .ASCII  <1>\S\
                                                   53 4F 4E 03  000B9 P.ABJ:  .ASCII  <3>\NOS\
                                                   53 4F 4E 03  000BD P.ABK:  .ASCII  <3>\NOS\

                                                                  DBG$CS_AFTER=          P.AAA
                                                                  DBG$CS_TEMPORARY=      P.AAB
                                                                  DBG$CS_SILENT=         P.AAC
                                                                  DBG$CS_NOSILENT=       P.AAD
                                                                  DBG$CS_WHEN=           P.AAE
                                                                  DBG$CS_DO=             P.AAF
                                                                  DBG$CS_READ=           P.AAG
                                                                  DBG$CS_WRITE=          P.AAH
                                                                  DBG$CS_MODIFY=         P.AAI
                                                                  DBG$CS_EXECUTE=        P.AAJ
                                                                  DBG$CS_RETURN=         P.AAK
                                                                  DBG$CS_SOURCE=         P.AAL
                                                                  DBG$CS_NOSOURCE=       P.AAM
                                                                  DBG$CS_SYSTEM=         P.AAN
                                                                  DBG$CS_NOSYSTEM=       P.AAO
                                                                  DBG$CS_INTO=           P.AAP
                                                                  DBG$CS_OVER=           P.AAQ
```

```
                        DBG$CS_EXCEPTION=   P.AAR
                        DBG$CS_CALL=        P.AAS
                        DBG$CS_BRANCH=      P.AAT
                        DBG$CS_LINE=        P.AAU
                        DBG$CS_INSTRUCTION= P.AAV
                        DBG$CS_EQUALS=      P.AAW
                        DBG$CS_L_PAREN=     P.AAX
                        DBG$CS_R_PAREN=     P.AAY
                        DBG$CS_COMMA=       P.AAZ
                        DBG$CS_SLASH=       P.ABA
                        DBG$CS_COLON=       P.ABB
                        DBG$CS_CR=          P.ABC

                                .PSECT  DBG$CODE,NOWRT,  SHR,  PIC,0

                    0FFC 00000  .ENTRY  DBG$EVENT_SYNTAX, Save R2,R3,R4,R5,R6,R7,-  ; 0589
                                        R8,R9,R10,R11                               ;
                    24   C2 00002  SUBL2  #36, SP                                   ;
                08  AC   D0 00005  MOVL   VERB_NODE, R0                              ; 0715
                04  A0   7C 00009  CLRQ   4(R0)                                    ;
                04  A0   9E 0000C  MOVAB  4(R0), ADVERB_LINK                       ; 0721
                08  A0   9E 00010  MOVAB  8(R0), NOUN_LINK                         ; 0722
                01  A0   9A 00014  MOVZBL 1(R0), R0                                ; 0727
                    50   91 00018  CMPB   R0, #1                                    ; 0731
                    04   12 0001B  BNEQ   1$                                        ;
                    56   D4 0001D  CLRL   CMD_TYPE                                  ; 0733
                    08   11 0001F  BRB    2$                                        ; 0734
                    50   91 00021  1$:    CMPB   R0, #14                           ; 0739
                    0A   12 00024  BNEQ   3$                                        ;
                    01   D0 00026  MOVL   #1, CMD_TYPE                              ; 0741
                    57   D4 00029  2$:    CLRL   CMD_KIND                          ; 0742
                    03   D0 0002B  MOVL   #3, SUB_KIND                             ; 0743
                    3A   11 0002E  BRB    7$                                        ; 0727
                    50   91 00030  3$:    CMPB   R0, #17                           ; 0747
                    08   12 00033  BNEQ   4$                                        ;
                    02   7D 00035  MOVQ   #2, CMD_TYPE                             ; 0749
                    02   D0 00038  MOVL   #2, SUB_KIND                             ; 0751
                    2D   11 0003B  BRB    7$                                        ; 0727
                    50   91 0003D  4$:    CMPB   R0, #11                           ; 0755
                    28   1F 00040  BLSSU  7$                                        ;
                    50   91 00042  CMPB   R0, #12                                   ;
                    23   1A 00045  BGTRU  7$                                        ;
                    03   D0 00047  MOVL   #3, CMD_TYPE                              ; 0757
                00000000G   00  D0 0004A  MOVL   DBG$GB_STP_PTR, R1                 ; 0758
                    61   9A 00051  MOVZBL (R1), SUB_KIND                           ;
                    55   D1 00054  CMPL   SUB_KIND, #4                             ; 0759
                    04   12 00057  BNEQ   5$                                        ;
                    57   D4 00059  CLRL   CMD_KIND                                  ; 0761
                    0D   11 0005B  BRB    7$                                        ;
                    55   D1 0005D  5$:    CMPL   SUB_KIND, #15                     ; 0763
                    05   12 00060  BNEQ   6$                                        ;
                    02   D0 00062  MOVL   #2, CMD_KIND                             ; 0765
                    03   11 00065  BRB    7$                                        ;
                    01   D0 00067  6$:    MOVL   #1, CMD_KIND                      ; 0768
                20  01   D0 0006A  7$:    MOVL   #1, AFTER_COUNT                   ; 0777
                    5A   7C 0006E  CLRQ   NOSILENT                                 ; 0780
```

```
                        14    AE  7C 00070          CLRQ    SOURCE                                  ; 0781
                        0C    AE  7C 00073          CLRQ    SYSTEM                                  ; 0783
                        04    AE  7C 00076          CLRQ    INTO                                    ; 0785
                              6E  D4 00079          CLRL    OVER                                    ; 0786
                        1C    AE  D4 0007B          CLRL    28(SP)                                  ; 0787
                    0C          50  91 0007E          CMPB    R0, #12                                 ;
                                12  12 00081          BNEQ    8$                                      ;
                        1C    AE  D6 00083          INCL    28(SP)                                  ;
                    51  00000000G 00  D0 00086          MOVL    DBG$GB_STP_PTR, R1                      ; 0789
          5B        61          01  0C  EF 0008D          EXTZV   #12, #1, (R1), SILENT                   ;
                                5B  5B  D2 00092          MCOML   SILENT, SILENT                          ;
                    53        04    AC  D0 00095  8$:     MOVL    INPUT_DESC, R3                          ; 0818
                    0B              50  91 00099          CMPB    R0, #11                                 ; 0796
                                    03  12 0009C          BNEQ    9$                                      ;
                                  0404  31 0009E          BRW     72$                                     ;
                    5A              01  D0 000A1  9$:     MOVL    #1, NOSILENT                            ; 0817
                                    01  DD 000A4  10$:     PUSHL   #1                                      ; 0818
                        00000000'   EF  9F 000A6          PUSHAB  DBG$CS_SLASH                            ;
                                    53  DD 000AC          PUSHL   R3                                      ;
                00000000G   00      03  FB 000AE          CALLS   #3, DBG$NMATCH                          ;
                    03              50  E8 000B5          BLBS    R0, 11$                                 ;
                                  0682  31 000B8          BRW     103$                                    ;
                                    01  DD 000BB  11$:     PUSHL   #1                                      ; 0826
                        00000000'   EF  9F 000BD          PUSHAB  DBG$CS_AFTER                            ;
                                    53  DD 000C3          PUSHL   R3                                      ;
                00000000G   00      03  FB 000C5          CALLS   #3, DBG$NMATCH                          ;
                    01              50  D1 000CC          CMPL    R0, #1                                  ;
                                    51  12 000CF          BNEQ    15$                                     ;
                                    56  D5 000D1          TSTL    CMD_TYPE                                ; 0828
                                    0A  13 000D3          BEQL    12$                                     ;
                    01              56  D1 000D5          CMPL    CMD_TYPE, #1                            ; 0829
                                    05  13 000D8          BEQL    12$                                     ;
                    02              56  D1 000DA          CMPL    CMD_TYPE, #2                            ; 0830
                                    65  12 000DD          BNEQ    16$                                     ;
                                    01  DD 000DF  12$:     PUSHL   #1                                      ; 0837
                        00000000'   EF  9F 000E1          PUSHAB  DBG$CS_COLON                            ;
                                    53  DD 000E7          PUSHL   R3                                      ;
                00000000G   00      03  FB 000E9          CALLS   #3, DBG$NMATCH                          ;
                    1A              50  E8 000F0          BLBS    R0, 14$                                 ;
                                    01  DD 000F3          PUSHL   #1                                      ;
                        00000000'   EF  9F 000F5          PUSHAB  DBG$CS_CR                               ;
                                    53  DD 000FB          PUSHL   R3                                      ;
                00000000G   00      03  FB 000FD          CALLS   #3, DBG$NMATCH                          ;
                    03              50  E8 00104          BLBS    R0, 13$                                 ;
                                  0990  31 00107          BRW     143$                                    ;
                                  093F  31 0010A  13$:     BRW     139$                                    ;
                              0C    AC  DD 0010D  14$:     PUSHL   MESSAGE_VECT                            ; 0845
                              24    AE  9F 00110          PUSHAB  AFTER_COUNT                             ; 0843
                                    53  DD 00113          PUSHL   R3                                      ;
                00000000G   00      03  FB 00115          CALLS   #3, DBG$NSAVE_DECIMAL_INTEGER           ;
                    85              50  E8 0011C          BLBS    R0, 10$                                 ;
                                  098E  31 0011F          BRW     145$                                    ; 0848
                                    01  DD 00122  15$:     PUSHL   #1                                      ; 0860
                        00000000'   EF  9F 00124          PUSHAB  DBG$CS_TEMPORARY                        ;
                                    53  DD 0012A          PUSHL   R3                                      ;
                00000000G   00      03  FB 0012C          CALLS   #3, DBG$NMATCH                          ;
                    01              50  D1 00133          CMPL    R0, #1                                  ;
```

```
                        14  12 00136          BNEQ    18$                                     ;
                        56  D5 00138          TSTL    CMD_TYPE                                ; 0864
                        0A  13 0013A          BEQL    17$                                     ;
                    01  56  D1 0013C          CMPL    CMD_TYPE, #1                            ; 0865
                        05  13 0013F          BEQL    17$                                     ;
                    02  56  D1 00141          CMPL    CMD_TYPE, #2                            ; 0866
                        5B  12 00144 16$:     BNEQ    21$                                     ;
                18  AE  01  D0 00146 17$:     MOVL    #1, TEMPORARY                           ; 0873
                        5B  11 0014A          BRB     23$                                     ; 0864
                        02  DD 0014C 18$:     PUSHL   #2                                      ; 0884
                00000000' EF  9F 0014E        PUSHAB  DBG$CS_SILENT                           ;
                        53  DD 00154          PUSHL   R3                                      ;
00000000G       00      03  FB 00156          CALLS   #3, DBG$NMATCH                          ;
                01      50  D1 0015D          CMPL    R0, #1                                  ;
                        07  12 00160          BNEQ    19$                                     ;
                    5B  01  D0 00162          MOVL    #1, SILENT                              ; 0886
                    5A  D4 00165              CLRL    NOSILENT                                ; 0887
                        64  11 00167          BRB     26$                                     ; 0820
                        04  DD 00169 19$:     PUSHL   #4                                      ; 0893
                00000000' EF  9F 0016B        PUSHAB  DBG$CS_NOSILENT                         ;
                        53  DD 00171          PUSHL   R3                                      ;
00000000G       00      03  FB 00173          CALLS   #3, DBG$NMATCH                          ;
                01      50  D1 0017A          CMPL    R0, #1                                  ;
                        05  12 0017D          BNEQ    20$                                     ;
                    5A  01  7D 0017F          MOVQ    #1, NOSILENT                            ; 0895
                        6F  11 00182          BRB     29$                                     ; 0820
                        01  DD 00184 20$:     PUSHL   #1                                      ; 0902
                00000000' EF  9F 00186        PUSHAB  DBG$CS_READ                             ;
                        53  DD 0018C          PUSHL   R3                                      ;
00000000G       00      03  FB 0018E          CALLS   #3, DBG$NMATCH                          ;
                01      50  D1 00195          CMPL    R0, #1                                  ;
                        0F  12 00198          BNEQ    24$                                     ;
                        56  D5 0019A          TSTL    CMD_TYPE                                ; 0909
                        05  13 0019C          BEQL    22$                                     ;
                    01  56  D1 0019E          CMPL    CMD_TYPE, #1                            ; 0910
                        6F  12 001A1 21$:     BNEQ    31$                                     ;
                        57  D4 001A3 22$:     CLRL    CMD_KIND                                ; 0913
                        55  D4 001A5          CLRL    SUB_KIND                                ; 0914
                        70  11 001A7 23$:     BRB     33$                                     ; 0909
                        01  DD 001A9 24$:     PUSHL   #1                                      ; 0924
                00000000' EF  9F 001AB        PUSHAB  DBG$CS_WRITE                            ;
                        53  DD 001B1          PUSHL   R3                                      ;
00000000G       00      03  FB 001B3          CALLS   #3, DBG$NMATCH                          ;
                01      50  D1 001BA          CMPL    R0, #1                                  ;
                        10  12 001BD          BNEQ    27$                                     ;
                        56  D5 001BF          TSTL    CMD_TYPE                                ; 0931
                        05  13 001C1          BEQL    25$                                     ;
                    01  56  D1 001C3          CMPL    CMD_TYPE, #1                            ; 0932
                        6E  12 001C6          BNEQ    35$                                     ;
                        57  D4 001C8 25$:     CLRL    CMD_KIND                                ; 0935
                    55  01  D0 001CA          MOVL    #1, SUB_KIND                            ; 0936
                        6F  11 001CD 26$:     BRB     37$                                     ; 0931
                        01  DD 001CF 27$:     PUSHL   #1                                      ; 0946
                00000000' EF  9F 001D1        PUSHAB  DBG$CS_MODIFY                           ;
                        53  DD 001D7          PUSHL   R3                                      ;
00000000G       00      03  FB 001D9          CALLS   #3, DBG$NMATCH                          ;
                01      50  D1 001E0          CMPL    R0, #1                                  ;
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                        10  12 001E3          BNEQ    30$                                     ;
                        56  D5 001E5          TSTL    CMD_TYPE                                ; 0953
                        05  13 001E7          BEQL    28$                                     ;
                    01  56  D1 001E9          CMPL    CMD_TYPE, #1                            ; 0954
                        48  12 001EC          BNEQ    35$                                     ;
                        57  D4 001EE 28$:     CLRL    CMD_KIND                                ; 0957
                    55  02  D0 001F0          MOVL    #2, SUB_KIND                            ; 0958
                        75  11 001F3 29$:     BRB     40$                                     ; 0953
                        01  DD 001F5 30$:     PUSHL   #1                                      ; 0969
                00000000' EF  9F 001F7          PUSHAB  DBG$CS_EXECUTE                          ;
                        53  DD 001FD          PUSHL   R3                                      ;
00000000G               00  FB 001FF          CALLS   #3, DBG$NMATCH                          ;
                        01  50 00206          CMPL    R0, #1                                  ;
                        10  12 00209          BNEQ    34$                                     ;
                        56  D5 0020B          TSTL    CMD_TYPE                                ; 0976
                        05  13 0020D          BEQL    32$                                     ;
                    01  56  D1 0020F          CMPL    CMD_TYPE, #1                            ; 0977
                        22  12 00212 31$:     BNEQ    35$                                     ;
                        57  D4 00214 32$:     CLRL    CMD_KIND                                ; 0980
                    55  03  D0 00216          MOVL    #3, SUB_KIND                            ; 0981
                        6E  11 00219 33$:     BRB     42$                                     ; 0976
                        01  DD 0021B 34$:     PUSHL   #1                                      ; 0992
                00000000' EF  9F 0021D          PUSHAB  DBG$CS_RETURN                           ;
                        53  DD 00223          PUSHL   R3                                      ;
00000000G               00  FB 00225          CALLS   #3, DBG$NMATCH                          ;
                        01  50 0022C          CMPL    R0, #1                                  ;
                        0F  12 0022F          BNEQ    38$                                     ;
                    02  56  D1 00231          CMPL    CMD_TYPE, #2                            ; 0999
                        03  12 00234          BNEQ    36$                                     ;
                      07FF  31 00236 35$:     BRW     138$                                    ;
                        57  D4 00239 36$:     CLRL    CMD_KIND                                ; 1002
                    55  04  D0 0023B          MOVL    #4, SUB_KIND                            ; 1003
                        65  11 0023E 37$:     BRB     44$                                     ; 0999
                        01  DD 00240 38$:     PUSHL   #1                                      ; 1014
                00000000' EF  9F 00242          PUSHAB  DBG$CS_EXCEPTION                        ;
                        53  DD 00248          PUSHL   R3                                      ;
00000000G               00  FB 0024A          CALLS   #3, DBG$NMATCH                          ;
                        01  50 00251          CMPL    R0, #1                                  ;
                        16  12 00254          BNEQ    41$                                     ;
                        56  D5 00256          TSTL    CMD_TYPE                                ; 1021
                        0A  13 00258          BEQL    39$                                     ;
                    01  56  D1 0025A          CMPL    CMD_TYPE, #1                            ; 1022
                        05  13 0025D          BEQL    39$                                     ;
                    03  56  D1 0025F          CMPL    CMD_TYPE, #3                            ; 1023
                        D2  12 00262          BNEQ    35$                                     ;
                    57  02  D0 00264 39$:     MOVL    #2, CMD_KIND                            ; 1026
                    55  0F  D0 00267          MOVL    #15, SUB_KIND                           ; 1027
                        7E  11 0026A 40$:     BRB     47$                                     ; 1021
                        02  DD 0026C 41$:     PUSHL   #2                                      ; 1038
                00000000' EF  9F 0026E          PUSHAB  DBG$CS_SOURCE                           ;
                        53  DD 00274          PUSHL   R3                                      ;
00000000G               00  FB 00276          CALLS   #3, DBG$NMATCH                          ;
                        01  50 0027D          CMPL    R0, #1                                  ;
                        09  12 00280          BNEQ    43$                                     ;
                    14  AE  01  D0 00282          MOVL    #1, SOURCE                          ; 1040
                        10  AE  D4 00286          CLRL    NOSOURCE                            ; 1041
                        5F  11 00289 42$:     BRB     47$                                     ; 0820
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                                04 DD 0028B 43$:    PUSHL   #4                                      ; 1047
                    00000000'   EF 9F 0028D         PUSHAB  DBG$CS_NOSOURCE                         ;
                                53 DD 00293         PUSHL   R3                                      ;
00000000G   00                  03 FB 00295         CALLS   #3, DBG$NMATCH                          ;
            01                  50 D1 0029C         CMPL    R0, #1                                  ;
                                06 12 0029F         BNEQ    45$                                     ;
         10 AE                  01 7D 002A1         MOVQ    #1, NOSOURCE                            ; 1049
                                66 11 002A5 44$:    BRB     49$                                     ; 0820
                                02 DD 002A7 45$:    PUSHL   #2                                      ; 1056
                    00000000'   EF 9F 002A9         PUSHAB  DBG$CS_SYSTEM                           ;
                                53 DD 002AF         PUSHL   R3                                      ;
00000000G   00                  03 FB 002B1         CALLS   #3, DBG$NMATCH                          ;
            01                  50 D1 002B8         CMPL    R0, #1                                  ;
                                0E 12 002BB         BNEQ    46$                                     ;
            02                  56 D1 002BD         CMPL    CMD_TYPE, #2                            ; 1063
                                66 13 002C0         BEQL    51$                                     ;
         0C AE                  01 D0 002C2         MOVL    #1, SYSTEM                              ; 1066
                       08 AE    D4 002C6           CLRL    NOSYSTEM                                ; 1067
                                62 11 002C9         BRB     52$                                     ; 1063
                                04 DD 002CB 46$:    PUSHL   #4                                      ; 1078
                    00000000'   EF 9F 002CD         PUSHAB  DBG$CS_NOSYSTEM                         ;
                                53 DD 002D3         PUSHL   R3                                      ;
00000000G   00                  03 FB 002D5         CALLS   #3, DBG$NMATCH                          ;
            01                  50 D1 002DC         CMPL    R0, #1                                  ;
                                0B 12 002DF         BNEQ    48$                                     ;
            02                  56 D1 002E1         CMPL    CMD_TYPE, #2                            ; 1085
                                62 13 002E4         BEQL    54$                                     ;
         08 AE                  01 7D 002E6         MOVQ    #1, NOSYSTEM                            ; 1088
                                64 11 002EA 47$:    BRB     55$                                     ; 1085
                                01 DD 002EC 48$:    PUSHL   #1                                      ; 1100
                    00000000'   EF 9F 002EE         PUSHAB  DBG$CS_INTO                             ;
                                53 DD 002F4         PUSHL   R3                                      ;
00000000G   00                  03 FB 002F6         CALLS   #3, DBG$NMATCH                          ;
            01                  50 D1 002FD         CMPL    R0, #1                                  ;
                                0D 12 00300         BNEQ    50$                                     ;
            02                  56 D1 00302         CMPL    CMD_TYPE, #2                            ; 1107
                                64  3 00305         BEQL    57$                                     ;
         04 AE                  01 D0 00307         MOVL    #1, INTO                                ; 1110
                                6E D4 0030B         CLRL    OVER                                    ; 1111
                                64 11 0030D 49$:    BRB     58$                                     ; 1107
                                01 DD 0030F 50$:    PUSHL   #1                                      ; 1121
                    00000000'   EF 9F 00311         PUSHAB  DBG$CS_OVER                             ;
                                53 DD 00317         PUSHL   R3                                      ;
00000000G   00                  03 FB 00319         CALLS   #3, DBG$NMATCH                          ;
            01                  50 D1 00320         CMPL    R0, #1                                  ;
                                0A 12 00323         BNEQ    53$                                     ;
            02                  56 D1 00325         CMPL    CMD_TYPE, #2                            ; 1128
                                64 13 00328 51$:    BEQL    60$                                     ;
            6E                  01 7D 0032A         MOVQ    #1, OVER                                ; 1131
                                67 11 0032D 52$:    BRB     61$                                     ; 1128
                                01 DD 0032F 53$:    PUSHL   #1                                      ; 1143
                    00000000'   EF 9F 00331         PUSHAB  DBG$CS_CALL                             ;
                                53 DD 00337         PUSHL   R3                                      ;
00000000G   00                  03 FB 00339         CALLS   #3, DBG$NMATCH                          ;
            01                  50 D1 00340         CMPL    R0, #1                                  ;
                                0D 12 00343         BNEQ    56$                                     ;
            02                  56 D1 00345         CMPL    CMD_TYPE, #2                            ; 1150
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                        6B  13 00348 54$:     BEQL    64$                                 ;
                57              01  D0 0034A        MOVL    #1, CMD_KIND                    ; 1153
                55              05  D0 0034D        MOVL    #5, SUB_KIND                    ; 1154
                                44  11 00350 55$:     BRB     61$                         ; 1150
                                01  DD 00352 56$:     PUSHL   #1                          ; 1165
                    00000000'   EF  9F 00354        PUSHAB  DBG$CS_BRANCH                   ;
                                53  DD 0035A        PUSHL   R3                          ;
00000000G       00              03  FB 0035C        CALLS   #3, DBG$NMATCH              ;
                01              50  D1 00363        CMPL    R0, #1                      ;
                                0D  12 00366        BNEQ    59$                         ;
                02              56  D1 00368        CMPL    CMD_TYPE, #2                ; 1172
                                48  13 0036B 57$:     BEQL    64$                         ;
                57              01  D0 0036D        MOVL    #1, CMD_KIND                ; 1175
                55              06  D0 00370        MOVL    #6, SUB_KIND                ; 1176
                                21  11 00373 58$:     BRB     61$                         ; 1172
                                01  DD 00375 59$:     PUSHL   #1                          ; 1187
                    00000000'   EF  9F 00377        PUSHAB  DBG$CS_LINE                 ;
                                53  DD 0037D        PUSHL   R3                          ;
00000000G       00              03  FB 0037F        CALLS   #3, DBG$NMATCH              ;
                01              50  D1 00386        CMPL    R0, #1                      ;
                                0E  12 00389        BNEQ    62$                         ;
                02              56  D1 0038B        CMPL    CMD_TYPE, #2                ; 1194
                                25  13 0038E 60$:     BEQL    64$                         ;
                57              01  D0 00390        MOVL    #1, CMD_KIND                ; 1197
                55              07  D0 00393        MOVL    #7, SUB_KIND                ; 1198
                            FD0B    31 00396 61$:     BRW     10$                         ; 1194
                                01  DD 00399 62$:     PUSHL   #1                          ; 1210
                    00000000'   EF  9F 0039B        PUSHAB  DBG$CS_INSTRUCTION          ;
                                53  DD 003A1        PUSHL   R3                          ;
00000000G       00              03  FB 003A3        CALLS   #3, DBG$NMATCH              ;
                01              50  D1 003AA        CMPL    R0, #1                      ;
                                03  13 003AD        BEQL    63$                         ;
                            00A7    31 003AF        BRW     68$                         ;
                02              56  D1 003B2 63$:     CMPL    CMD_TYPE, #2                ; 1217
                                7B  13 003B5 64$:     BEQL    66$                         ;
                57              01  D0 003B7        MOVL    #1, CMD_KIND                ; 1220
                55              08  D0 003BA        MOVL    #8, SUB_KIND                ; 1221
                                01  DD 003BD        PUSHL   #1                          ; 1226
                    00000000'   EF  9F 003BF        PUSHAB  DBG$CS_EQUALS               ;
                                53  DD 003C5        PUSHL   R3                          ;
00000000G       00              03  FB 003C7        CALLS   #3, DBG$NMATCH              ;
                C5              50  E9 003CE        BLBC    R0, 61$                     ;
                55              09  D0 003D1        MOVL    #9, SUB_KIND                ; 1232
                                01  DD 003D4        PUSHL   #1                          ; 1237
                    00000000'   EF  9F 003D6        PUSHAB  DBG$CS_L_PAREN              ;
                                53  DD 003DC        PUSHL   R3                          ;
00000000G       00              03  FB 003DE        CALLS   #3, DBG$NMATCH              ;
                4D              50  E9 003E5        BLBC    R0, 67$                     ;
                                04  DD 003E8 65$:     PUSHL   #4                          ; 1245
00000000G       00              01  FB 003EA        CALLS   #1, DBG$GET_TEMPMEM         ;
                54              50  D0 003F1        MOVL    R0, NOUN_NODE               ;
                        08      A4  D4 003F4        CLRL    8(NOUN_NODE)                ;
                69              54  D0 003F7        MOVL    NOUN_NODE, (NOUN_LINK)      ;
                59      08      A4  9E 003FA        MOVAB   8(NOUN_NODE), NOUN_LINK     ;
                                53  DD 003FE        PUSHL   R3                          ; 1253
00000000G       00              01  FB 00400        CALLS   #1, DBG$OPCODE_INDEX        ;
                64              50  D0 00407        MOVL    R0, (NOUN_NODE)             ;
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                        01   DD 0040A          PUSHL   #1                                      ; 1256
                00000000'   EF  9F 0040C          PUSHAB  DBG$CS_COMMA                            ;
                        53   DD 00412          PUSHL   R3                                      ;
00000000G       00          03   FB 00414          CALLS   #3, DBG$NMATCH                      ;
                CA          50   E8 0041B          BLBS    R0, 65$                             ;
                        01   DD 0041E          PUSHL   #1                                      ; 1261
                00000000'   EF  9F 00420          PUSHAB  DBG$CS_R_PAREN                          ;
                        53   DD 00426          PUSHL   R3                                      ;
00000000G       00          03   FB 00428          CALLS   #3, DBG$NMATCH                      ;
                70          50   E8 0042F          BLBS    R0, 71$                             ;
                      0603  31   00432 66$:        BRW     138$                                ;
                        04   DD 00435 67$:        PUSHL   #4                                      ; 1265
00000000G       00          01   FB 00437          CALLS   #1, DBG$GET_TEMPMEM                 ;
                54          50   D0 0043E          MOVL    R0, NOUN_NODE                       ;
                      08    A4   D4 00441          CLRL    8(NOUN_NODE)                        ;
                69          54   D0 00444          MOVL    NOUN_NODE, (NOUN_LINK)              ;
                59      08  A4   9E 00447          MOVAB   8(NOUN_NODE), NOUN_LINK             ;
                        53   DD 0044B          PUSHL   R3                                      ; 1272
00000000G       00          01   FB 0044D          CALLS   #1, DBG$OPCODE_INDEX                ;
                64          50   D0 00454          MOVL    R0, (NOUN_NODE)                     ;
                        49   11 00457          BRB     71$                                     ; 1226
                        01   DD 00459 68$:        PUSHL   #1                                      ; 1287
                00000000'   EF  9F 0045B          PUSHAB  P.ABD                                   ;
                        53   DD 00461          PUSHL   R3                                      ;
00000000G       00          03   FB 00463          CALLS   #3, DBG$NMATCH                      ;
                01          50   D1 0046A          CMPL    R0, #1                              ;
                        08   12 0046D          BNEQ    69$                                     ;
                00000000'   EF  9F 0046F          PUSHAB  P.ABE                                   ; 1288
                        1C   11 00475          BRB     70$                                     ;
                        03   DD 00477 69$:        PUSHL   #3                                      ; 1290
                00000000'   EF  9F 00479          PUSHAB  P.ABF                                   ;
                        53   DD 0047F          PUSHL   R3                                      ;
00000000G       00          03   FB 00481          CALLS   #3, DBG$NMATCH                      ;
                01          50   D1 00488          CMPL    R0, #1                              ;
                        A5   12 0048B          BNEQ    66$                                     ;
                00000000'   EF  9F 0048D          PUSHAB  P.ABG                                   ; 1291
                        01   DD 00493 70$:        PUSHL   #1                                      ;
                00028148    8F  DD 00495          PUSHL   #164168                             ;
00000000G       00          03   FB 0049B          CALLS   #3, LIB$SIGNAL                      ;
                      FBFF  31   004A2 71$:        BRW     10$                                 ;
                        01   DD 004A5 72$:        PUSHL   #1                                      ; 1329
                00000000'   EF  9F 004A7          PUSHAB  DBG$CS_RETURN                           ;
                        53   DD 004AD          PUSHL   R3                                      ;
00000000G       00          03   FB 004AF          CALLS   #3, DBG$NMATCH                      ;
                01          50   D1 004B6          CMPL    R0, #1                              ;
                        07   12 004B9          BNEQ    73$                                     ;
                        57   D4 004BB          CLRL    CMD_KIND                                ; 1331
                55          04   D0 004BD          MOVL    #4, SUB_KIND                        ; 1332
                        74   11 004C0          BRB     77$                                     ; 1323
                        02   DD 004C2 73$:        PUSHL   #2                                      ; 1338
                00000000'   EF  9F 004C4          PUSHAB  DBG$CS_SOURCE                           ;
                        53   DD 004CA          PUSHL   R3                                      ;
00000000G       00          03   FB 004CC          CALLS   #3, DBG$NMATCH                      ;
                01          50   D1 004D3          CMPL    R0, #1                              ;
                        09   12 004D6          BNEQ    74$                                     ;
            14  AE          01   D0 004D8          MOVL    #1, SOURCE                          ; 1340
                    10  AE  D4   004DC          CLRL    NOSOURCE                                ; 1341
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                                72  11 004DF            BRB     79$                                     ; 1323
                                04  DD 004E1 74$:       PUSHL   #4                                      ; 1347
                    00000000'   EF  9F 004E3            PUSHAB  DBG$CS_NOSOURCE                         ;
                                53  DD 004E9            PUSHL   R3                                      ;
00000000G                   00  03  FB 004EB            CALLS   #3, DBG$NMATCH                          ;
                            01  50  D1 004F2            CMPL    R0, #1                                  ;
                                06  12 004F5            BNEQ    75$                                     ;
                10  AE          01  7D 004F7            MOVQ    #1, NOSOURCE                            ; 1349
                                71  11 004FB            BRB     81$                                     ; 1323
                                02  DD 004FD 75$:       PUSHL   #2                                      ; 1356
                    00000000'   EF  9F 004FF            PUSHAB  DBG$CS_SYSTEM                           ;
                                53  DD 00505            PUSHL   R3                                      ;
00000000G                   00  03  FB 00507            CALLS   #3, DBG$NMATCH                          ;
                            01  50  D1 0050E            CMPL    R0, #1                                  ;
                                09  12 00511            BNEQ    76$                                     ;
                0C  AE          01  D0 00513            MOVL    #1, SYSTEM                              ; 1358
                        08  AE      D4 00517            CLRL    NOSYSTEM                                ; 1359
                                70  11 0051A            BRB     83$                                     ; 1323
                                04  DD 0051C 76$:       PUSHL   #4                                      ; 1365
                    00000000'   EF  9F 0051E            PUSHAB  DBG$CS_NOSYSTEM                         ;
                                53  DD 00524            PUSHL   R3                                      ;
00000000G                   00  03  FB 00526            CALLS   #3, DBG$NMATCH                          ;
                            01  50  D1 0052D            CMPL    R0, #1                                  ;
                                06  12 00530            BNEQ    78$                                     ;
                08  AE          01  7D 00532            MOVQ    #1, NOSYSTEM                            ; 1367
                                6F  11 00536 77$:       BRB     85$                                     ; 1323
                                02  DD 00538 78$:       PUSHL   #2                                      ; 1374
                    00000000'   EF  9F 0053A            PUSHAB  DBG$CS_SILENT                           ;
                                53  DD 00540            PUSHL   R3                                      ;
00000000G                   00  03  FB 00542            CALLS   #3, DBG$NMATCH                          ;
                            01  50  D1 00549            CMPL    R0, #1                                  ;
                                07  12 0054C            BNEQ    80$                                     ;
                            5B      01  D0 0054E        MOVL    #1, SILENT                              ; 1376
                                5A  D4 00551            CLRL    NOSILENT                                ; 1377
                                70  11 00553 79$:       BRB     87$                                     ; 1323
                                04  DD 00555 80$:       PUSHL   #4                                      ; 1383
                    00000000'   EF  9F 00557            PUSHAB  DBG$CS_NOSILENT                         ;
                                53  DD 0055D            PUSHL   R3                                      ;
00000000G                   00  03  FB 0055F            CALLS   #3, DBG$NMATCH                          ;
                            01  50  D1 00566            CMPL    R0, #1                                  ;
                                05  12 00569            BNEQ    82$                                     ;
                            5A      01  7D 0056B        MOVQ    #1, NOSILENT                            ; 1386
                                73  11 0056E 81$:       BRB     89$                                     ; 1323
                                01  DD 00570 82$:       PUSHL   #1                                      ; 1392
                    00000000'   EF  9F 00572            PUSHAB  DBG$CS_INTO                             ;
                                53  DD 00578            PUSHL   R3                                      ;
00000000G                   00  03  FB 0057A            CALLS   #3, DBG$NMATCH                          ;
                            01  50  D1 00581            CMPL    R0, #1                                  ;
                                08  12 00584            BNEQ    84$                                     ;
                04  AE          01  D0 00586            MOVL    #1, INTO                                ; 1394
                                6E  D4 0058A            CLRL    OVER                                    ; 1395
                                73  11 0058C 83$:       BRB     91$                                     ; 1323
                                01  DD 0058E 84$:       PUSHL   #1                                      ; 1401
                    00000000'   EF  9F 00590            PUSHAB  DBG$CS_OVER                             ;
                                53  DD 00596            PUSHL   R3                                      ;
00000000G                   00  03  FB 00598            CALLS   #3, DBG$NMATCH                          ;
                            01  50  D1 0059F            CMPL    R0, #1                                  ;
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                        05  12 005A2          BNEQ    86$                                 ;
                    6E  01  7D 005A4          MOVQ    #1, OVER                            ; 1403
                        76  11 005A7 85$:     BRB     93$                                 ; 1323
                        01  DD 005A9 86$:     PUSHL   #1                                  ; 1410
                00000000' EF  9F 005AB          PUSHAB  DBG$CS_CALL                         ;
                        53  DD 005B1          PUSHL   R3                                  ;
00000000G       00          03  FB 005B3          CALLS   #3, DBG$NMATCH                  ;
                01          50  D1 005BA          CMPL    R0, #1                          ;
                            08  12 005BD          BNEQ    88$                             ;
                    57      01  D0 005BF          MOVL    #1, CMD_KIND                    ; 1412
                    55      05  D0 005C2          MOVL    #5, SUB_KIND                    ; 1413
                            58  11 005C5 87$:     BRB     93$                             ; 1323
                            01  DD 005C7 88$:     PUSHL   #1                              ; 1419
                00000000' EF  9F 005C9          PUSHAB  DBG$CS_BRANCH                   ;
                        53  DD 005CF          PUSHL   R3                                  ;
00000000G       00          03  FB 005D1          CALLS   #3, DBG$NMATCH                  ;
                01          50  D1 005D8          CMPL    R0, #1                          ;
                            08  12 005DB          BNEQ    90$                             ;
                    57      01  D0 005DD          MOVL    #1, CMD_KIND                    ; 1421
                    55      06  D0 005E0          MOVL    #6, SUB_KIND                    ; 1422
                            3A  11 005E3 89$:     BRB     93$                             ; 1323
                            01  DD 005E5 90$:     PUSHL   #1                              ; 1428
                00000000' EF  9F 005E7          PUSHAB  DBG$CS_EXCEPTION                ;
                        53  DD 005ED          PUSHL   R3                                  ;
00000000G       00          03  FB 005EF          CALLS   #3, DBG$NMATCH                  ;
                01          50  D1 005F6          CMPL    R0, #1                          ;
                            08  12 005F9          BNEQ    92$                             ;
                    57      02  D0 005FB          MOVL    #2, CMD_KIND                    ; 1430
                    55      0F  D0 005FE          MOVL    #15, SUB_KIND                   ; 1431
                            1C  11 00601 91$:     BRB     93$                             ; 1323
                            01  DD 00603 92$:     PUSHL   #1                              ; 1437
                00000000' EF  9F 00605          PUSHAB  DBG$CS_LINE                     ;
                        53  DD 0060B          PUSHL   R3                                  ;
00000000G       00          03  FB 0060D          CALLS   #3, DBG$NMATCH                  ;
                01          50  D1 00614          CMPL    R0, #1                          ;
                            09  12 00617          BNEQ    94$                             ;
                    57      01  D0 00619          MOVL    #1, CMD_KIND                    ; 1439
                    55      07  D0 0061C          MOVL    #7, SUB_KIND                    ; 1440
                        0104  31 0061F 93$:     BRW     102$                            ; 1323
                            01  DD 00622 94$:     PUSHL   #1                              ; 1447
                00000000' EF  9F 00624          PUSHAB  DBG$CS_INSTRUCTION              ;
                        53  DD 0062A          PUSHL   R3                                  ;
00000000G       00          03  FB 0062C          CALLS   #3, DBG$NMATCH                  ;
                01          50  D1 00633          CMPL    R0, #1                          ;
                            03  13 00636          BEQL    95$                             ;
                        00A2  31 00638          BRW     99$                             ;
                    57      01  D0 0063B 95$:     MOVL    #1, CMD_KIND                    ; 1449
                    55      08  D0 0063E          MOVL    #8, SUB_KIND                    ; 1450
                            01  DD 00641          PUSHL   #1                              ; 1455
                00000000' EF  9F 00643          PUSHAB  DBG$CS_EQUALS                   ;
                        53  DD 00649          PUSHL   R3                                  ;
00000000G       00          03  FB 0064B          CALLS   #3, DBG$NMATCH                  ;
                CA          50  E9 00652          BLBC    R0, 93$                         ;
                    55      09  D0 00655          MOVL    #9, SUB_KIND                    ; 1461
                            01  DD 00658          PUSHL   #1                              ; 1465
                00000000' EF  9F 0065A          PUSHAB  DBG$CS_L_PAREN                  ;
                        53  DD 00660          PUSHL   R3                                  ;
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                                                                                                                                    ;
00000000G  00           03  FB 00662          CALLS   #3, DBG$NMATCH                                                            ;
           4D           50  E9 00669          BLBC    R0, 98$                                                                   ;
                        04  DD 0066C 96$:     PUSHL   #4                                                                        ; 1472
00000000G  00           01  FB 0066E          CALLS   #1, DBG$GET_TEMPMEM                                                       ;
           54           50  D0 00675          MOVL    R0, NOUN_NODE                                                             ;
                   08   A4  D4 00678          CLRL    8(NOUN_NODE)                                                              ;
           69           54  D0 0067B          MOVL    NOUN_NODE, (NOUN_LINK)                                                    ;
           59      08   A4  9E 0067E          MOVAB   8(NOUN_NODE), NOUN_LINK                                                   ;
                        53  DD 00682          PUSHL   R3                                                                        ; 1479
00000000G  00           01  FB 00684          CALLS   #1, DBG$OPCODE_INDEX                                                      ;
           64           50  D0 0068B          MOVL    R0, (NOUN_NODE)                                                           ;
                        01  DD 0068E          PUSHL   #1                                                                        ; 1482
                00000000' EF  9F 00690          PUSHAB  DBG$CS_COMMA                                                              ;
                        53  DD 00696          PUSHL   R3                                                                        ;
00000000G  00           03  FB 00698          CALLS   #3, DBG$NMATCH                                                            ;
           CA           50  E8 0069F          BLBS    R0, 96$                                                                   ;
                        01  DD 006A2          PUSHL   #1                                                                        ; 1487
                00000000' EF  9F 006A4          PUSHAB  DBG$CS_R_PAREN                                                            ;
                        53  DD 006AA          PUSHL   R3                                                                        ;
00000000G  00           03  FB 006AC          CALLS   #3, DBG$NMATCH                                                            ;
           70           50  E8 006B3          BLBS    R0, 102$                                                                  ;
                    037F 31  006B6 97$:     BRW     138$                                                                      ;
                        04  DD 006B9 98$:     PUSHL   #4                                                                        ; 1491
00000000G  00           01  FB 006BB          CALLS   #1, DBG$GET_TEMPMEM                                                       ;
           54           50  D0 006C2          MOVL    R0, NOUN_NODE                                                             ;
                   08   A4  D4 006C5          CLRL    8(NOUN_NODE)                                                              ;
           69           54  D0 006C8          MOVL    NOUN_NODE, (NOUN_LINK)                                                    ;
           59      08   A4  9E 006CB          MOVAB   8(NOUN_NODE), NOUN_LINK                                                   ;
                        53  DD 006CF          PUSHL   R3                                                                        ; 1497
00000000G  00           01  FB 006D1          CALLS   #1, DBG$OPCODE_INDEX                                                      ;
           64           50  D0 006D8          MOVL    R0, (NOUN_NODE)                                                           ;
                        49  11 006DB          BRB     102$                                                                      ; 1455
                        01  DD 006DD 99$:     PUSHL   #1                                                                        ; 1507
                00000000' EF  9F 006DF          PUSHAB  P.ABH                                                                     ;
                        53  DD 006E5          PUSHL   R3                                                                        ;
00000000G  00           03  FB 006E7          CALLS   #3, DBG$NMATCH                                                            ;
           01           50  D1 006EE          CMPL    R0, #1                                                                    ;
                        08  12 006F1          BNEQ    100$                                                                      ;
                00000000' EF  9F 006F3          PUSHAB  P.ABI                                                                     ; 1508
                        1C  11 006F9          BRB     101$                                                                      ;
                        03  DD 006FB 100$:     PUSHL   #3                                                                        ; 1510
                00000000' EF  9F 006FD          PUSHAB  P.ABJ                                                                     ;
                        53  DD 00703          PUSHL   R3                                                                        ;
00000000G  00           03  FB 00705          CALLS   #3, DBG$NMATCH                                                            ;
           01           50  D1 0070C          CMPL    R0, #1                                                                    ;
                        A5  12 0070F          BNEQ    97$                                                                       ;
                00000000' EF  9F 00711          PUSHAB  P.ABK                                                                     ; 1511
                        01  DD 00717 101$:     PUSHL   #1                                                                        ;
                00028148    8F  DD 00719          PUSHL   #164168                                                               ;
00000000G  00           03  FB 0071F          CALLS   #3, LIB$SIGNAL                                                            ;
                        01  DD 00726 102$:     PUSHL   #1                                                                        ; 1523
                00000000' EF  9F 00728          PUSHAB  DBG$CS_COMMA                                                              ;
                        53  DD 0072E          PUSHL   R3                                                                        ;
00000000G  00           03  FB 00730          CALLS   #3, DBG$NMATCH                                                            ;
           03           50  E9 00737          BLBC    R0, 103$                                                                  ;
                    FD68 31  0073A          BRW     72$                                                                       ;
                        03  DD 0073D 103$:     PUSHL   #3                                                                        ; 1525
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                00000000G  00              01 FB 0073F          CALLS   #1, DBG$GET_TEMPMEM                      ;
                           52              50 D0 00746          MOVL    R0, ADVERB_NODE                         ;
                                        08 A2 D4 00749          CLRL    8(ADVERB_NODE)                          ;
                           68              52 D0 0074C          MOVL    ADVERB_NODE, (ADVERB_LINK)              ;
                           58           08 A2 9E 0074F          MOVAB   8(ADVERB_NODE), ADVERB_LINK             ;
                                           57 D5 00753          TSTL    CMD_KIND                                ; 1538
                                           31 12 00755          BNEQ    108$                                    ;
                                           55 D5 00757          TSTL    SUB_KIND                                ; 1542
                                           05 12 00759          BNEQ    104$                                    ;
                           50              06 D0 0075B          MOVL    #6, R0                                  ;
                                           6C 11 0075E          BRB     116$                                    ;
                           01              55 D1 00760 104$:    CMPL    SUB_KIND, #1                            ; 1544
                                           05 12 00763          BNEQ    105$                                    ;
                           50              07 D0 00765          MOVL    #7, R0                                  ;
                                           62 11 00768          BRB     116$                                    ;
                           02              55 D1 0076A 105$:    CMPL    SUB_KIND, #2                            ; 1546
                                           05 12 0076D          BNEQ    106$                                    ;
                           50              08 D0 0076F          MOVL    #8, R0                                  ;
                                           58 11 00772          BRB     116$                                    ;
                           03              55 D1 00774 106$:    CMPL    SUB_KIND, #3                            ; 1548
                                           05 12 00777          BNEQ    107$                                    ;
                           50              09 D0 00779          MOVL    #9, R0                                  ;
                                           4E 11 0077C          BRB     116$                                    ;
                           04              55 D1 0077E 107$:    CMPL    SUB_KIND, #4                            ; 1550
                                           41 12 00781          BNEQ    114$                                    ;
                           50              0A D0 00783          MOVL    #10, R0                                 ;
                                           44 11 00786          BRB     116$                                    ; 1540
                           02              57 D1 00788 108$:    CMPL    CMD_KIND, #2                            ; 1556
                                           05 12 0078B          BNEQ    109$                                    ;
                           62              0B 90 0078D          MOVB    #11, (ADVERB_NODE)                      ; 1557
                                           3D 11 00790          BRB     117$                                    ;
                           01              57 D1 00792 109$:    CMPL    CMD_KIND, #1                            ; 1560
                                           38 12 00795          BNEQ    117$                                    ;
                           05              55 D1 00797          CMPL    SUB_KIND, #5                            ; 1564
                                           05 12 0079A          BNEQ    110$                                    ;
                           50              12 D0 0079C          MOVL    #18, R0                                 ;
                                           2B 11 0079F          BRB     116$                                    ;
                           06              55 D1 007A1 110$:    CMPL    SUB_KIND, #6                            ; 1566
                                           05 12 007A4          BNEQ    111$                                    ;
                           50              13 D0 007A6          MOVL    #19, R0                                 ;
                                           21 11 007A9          BRB     116$                                    ;
                           08              55 D1 007AB 111$:    CMPL    SUB_KIND, #8                            ; 1568
                                           05 12 007AE          BNEQ    112$                                    ;
                           50              15 D0 007B0          MOVL    #21, R0                                 ;
                                           17 11 007B3          BRB     116$                                    ;
                           09              55 D1 007B5 112$:    CMPL    SUB_KIND, #9                            ; 1570
                                           05 12 007B8          BNEQ    113$                                    ;
                           50              16 D0 007BA          MOVL    #22, R0                                 ;
                                           0D 11 007BD          BRB     116$                                    ;
                           07              55 D1 007BF 113$:    CMPL    SUB_KIND, #7                            ; 1572
                                           05 13 007C2          BEQL    115$                                    ;
                           50              01 CE 007C4 114$:    MNEGL   #1, R0                                  ;
                                           03 11 007C7          BRB     116$                                    ;
                           50              14 D0 007C9 115$:    MOVL    #20, R0                                 ;
                           62              50 90 007CC 116$:    MOVB    R0, (ADVERB_NODE)                       ; 1562
                           01           20 AE D1 007CF 117$:    CMPL    AFTER_COUNT, #1                         ; 1583
                                           27 13 007D3          BEQL    119$                                    ;
```

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                                03 DD 007D5          PUSHL   #3                                      ; 1585
00000000G   00                  01 FB 007D7          CALLS   #1, DBG$GET_TEMPMEM
            52                  50 D0 007DE          MOVL    R0, ADVERB_NODE
                          08    A2 D4 007E1          CLRL    8(ADVERB_NODE)
            68                  52 D0 007E4          MOVL    ADVERB_NODE, (ADVERB_LINK)
            58            08    A2 9E 007E7          MOVAB   8(ADVERB_NODE), ADVERB_LINK
                          20    AE D5 007EB          TSTL    AFTER_COUNT                             ; 1592
                                05 12 007EE          BNEQ    118$
            62                  01 90 007F0          MOVB    #1, (ADVERB_NODE)                       ; 1594
                                07 11 007F3          BRB     119$
                                62 94 007F5 118$:    CLRB    (ADVERB_NODE)                           ; 1597
                    04    A2    20 AE D0 007F7       MOVL    AFTER_COUNT, 4(ADVERB_NODE)             ; 1598
            1B                  58 E9 007FC 119$:    BLBC    SILENT, 120$                            ; 1606
                                03 DD 007FF          PUSHL   #3                                      ; 1608
00000000G   00                  01 FB 00801          CALLS   #1, DBG$GET_TEMPMEM
            52                  50 D0 00808          MOVL    R0, ADVERB_NODE
                          08    A2 D4 0080B          CLRL    8(ADVERB_NODE)
            68                  52 D0 0080E          MOVL    ADVERB_NODE, (ADVERB_LINK)
            58            08    A2 9E 00811          MOVAB   8(ADVERB_NODE), ADVERB_LINK
            62                  02 90 00815          MOVB    #2, (ADVERB_NODE)                       ; 1610
                                1C 11 00818          BRB     121$                                    ; 1606
            19                  5A E9 0081A 120$:    BLBC    NOSILENT, 121$                          ; 1613
                                03 DD 0081D          PUSHL   #3                                      ; 1615
00000000G   00                  01 FB 0081F          CALLS   #1, DBG$GET_TEMPMEM
            52                  50 D0 00826          MOVL    R0, ADVERB_NODE
                          08    A2 D4 00829          CLRL    8(ADVERB_NODE)
            68                  52 D0 0082C          MOVL    ADVERB_NODE, (ADVERB_LINK)
            58            08    A2 9E 0082F          MOVAB   8(ADVERB_NODE), ADVERB_LINK
            62                  03 90 00833          MOVB    #3, (ADVERB_NODE)                       ; 1617
            19            18    AE E9 00836 121$:    BLBC    TEMPORARY, 122$                         ; 1623
                                03 DD 0083A          PUSHL   #3                                      ; 1625
00000000G   00                  01 FB 0083C          CALLS   #1, DBG$GET_TEMPMEM
            52                  50 D0 00843          MOVL    R0, ADVERB_NODE
                          08    A2 D4 00846          CLRL    8(ADVERB_NODE)
            68                  52 D0 00849          MOVL    ADVERB_NODE, (ADVERB_LINK)
            58            08    A2 9E 0084C          MOVAB   8(ADVERB_NODE), ADVERB_LINK
            62                  01 90 00850          MOVB    #1, (ADVERB_NODE)                       ; 1627
            19            14    AE E9 00853 122$:    BLBC    SOURCE, 123$                            ; 1634
                                03 DD 00857          PUSHL   #3                                      ; 1636
00000000G   00                  01 FB 00859          CALLS   #1, DBG$GET_TEMPMEM
            52                  50 D0 00860          MOVL    R0, ADVERB_NODE
                          08    A2 D4 00863          CLRL    8(ADVERB_NODE)
            68                  52 D0 00866          MOVL    ADVERB_NODE, (ADVERB_LINK)
            58            08    A2 9E 00869          MOVAB   8(ADVERB_NODE), ADVERB_LINK
            62                  0C 90 0086D          MOVB    #12, (ADVERB_NODE)                      ; 1638
            19            10    AE E9 00870 123$:    BLBC    NOSOURCE, 124$                          ; 1641
                                03 DD 00874          PUSHL   #3                                      ; 1643
00000000G   00                  01 FB 00876          CALLS   #1, DBG$GET_TEMPMEM
            52                  50 D0 0087D          MOVL    R0, ADVERB_NODE
                          08    A2 D4 00880          CLRL    8(ADVERB_NODE)
            68                  52 D0 00883          MOVL    ADVERB_NODE, (ADVERB_LINK)
            58            08    A2 9E 00886          MOVAB   8(ADVERB_NODE), ADVERB_LINK
            62                  0D 90 0088A          MOVB    #13, (ADVERB_NODE)                      ; 1645
            01                  57 D1 0088D 124$:    CMPL    CMD_KIND, #1                            ; 1651
                                09 13 00890          BEQL    125$
                                57 D5 00892          TSTL    CMD_KIND                                ; 1652
                                78 12 00894          BNEQ    129$
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                04              55  D1 00896          CMPL    SUB_KIND, #4                                    ; 1653
                                73  12 00899          BNEQ    129$                                            ;
                19          0C  AE  E9 0089B 125$:     BLBC    SYSTEM, 126$                                    ; 1656
                                03  DD 0089F          PUSHL   #3                                              ; 1658
00000000G       00              01  FB 008A1          CALLS   #1, DBG$GET_TEMPMEM                             ;
                52              50  D0 008A8          MOVL    R0, ADVERB_NODE                                 ;
                            08  A2  D4 008AB          CLRL    8(ADVERB_NODE)                                  ;
                68              52  D0 008AE          MOVL    ADVERB_NODE, (ADVERB_LINK)                      ;
                58          08  A2  9E 008B1          MOVAB   8(ADVERB_NODE), ADVERB_LINK                     ;
                62              0E  90 008B5          MOVB    #14, (ADVERB_NODE)                              ; 1660
                19          08  AE  E9 008B8 126$:     BLBC    NOSYSTEM, 127$                                  ; 1663
                                03  DD 008BC          PUSHL   #3                                              ; 1665
00000000G       00              01  FB 008BE          CALLS   #1, DBG$GET_TEMPMEM                             ;
                52              50  D0 008C5          MOVL    R0, ADVERB_NODE                                 ;
                            08  A2  D4 008C8          CLRL    8(ADVERB_NODE)                                  ;
                68              52  D0 008CB          MOVL    ADVERB_NODE, (ADVERB_LINK)                      ;
                58          08  A2  9E 008CE          MOVAB   8(ADVERB_NODE), ADVERB_LINK                     ;
                62              0F  90 008D2          MOVB    #15, (ADVERB_NODE)                              ; 1667
                19          04  AE  E9 008D5 127$:     BLBC    INTO, 128$                                      ; 1670
                                03  DD 008D9          PUSHL   #3                                              ; 1672
00000000G       00              01  FB 008DB          CALLS   #1, DBG$GET_TEMPMEM                             ;
                52              50  D0 008E2          MOVL    R0, ADVERB_NODE                                 ;
                            08  A2  D4 008E5          CLRL    8(ADVERB_NODE)                                  ;
                68              52  D0 008E8          MOVL    ADVERB_NODE, (ADVERB_LINK)                      ;
                58          08  A2  9E 008EB          MOVAB   8(ADVERB_NODE), ADVERB_LINK                     ;
                62              10  90 008EF          MOVB    #16, (ADVERB_NODE)                              ; 1674
                19              6E  E9 008F2 128$:     BLBC    OVER, 129$                                      ; 1677
                                03  DD 008F5          PUSHL   #3                                              ; 1679
00000000G       00              01  FB 008F7          CALLS   #1, DBG$GET_TEMPMEM                             ;
                52              50  D0 008FE          MOVL    R0, ADVERB_NODE                                 ;
                            08  A2  D4 00901          CLRL    8(ADVERB_NODE)                                  ;
                68              52  D0 00904          MOVL    ADVERB_NODE, (ADVERB_LINK)                      ;
                58          08  A2  9E 00907          MOVAB   8(ADVERB_NODE), ADVERB_LINK                     ;
                62              11  90 0090B          MOVB    #17, (ADVERB_NODE)                              ; 1681
                03              56  D1 0090E 129$:     CMPL    CMD_TYPE, #3                                    ; 1690
                                60  13 00911          BEQL    132$                                            ;
                                57  D5 00913          TSTL    CMD_KIND                                        ; 1691
                                5C  12 00915          BNEQ    132$                                            ;
                                04  DD 00917 130$:     PUSHL   #4                                              ; 1695
00000000G       00              01  FB 00919          CALLS   #1, DBG$GET_TEMPMEM                             ;
                54              50  D0 00920          MOVL    R0, NOUN_NODE                                   ;
                            08  A4  D4 00923          CLRL    8(NOUN_NODE)                                    ;
                69              54  D0 00926          MOVL    NOUN_NODE, (NOUN_LINK)                          ;
                59          08  A4  9E 00929          MOVAB   8(NOUN_NODE), NOUN_LINK                         ;
00000000'       EF              01  90 0092D          MOVB    #1, DBG$GB_SET_BREAK_FLAG                       ; 1709
                            0C  AC  DD 00934          PUSHL   MESSAGE_VECT                                    ; 1713
                                09  DD 00937          PUSHL   #9                                              ; 1711
                7E  00000000G   00  9A 00939          MOVZBL  DBG$GB_RADIX, -(SP)                             ; 1712
                                18  BB 00940          PUSHR   #^M<R3,R4>                                      ; 1711
00000000G       00              05  FB 00942          CALLS   #5, DBG$NPARSE_ADDRESS                          ;
                55              50  D0 00949          MOVL    R0, STATUS                                      ;
                    00000000'   EF  94 0094C          CLRB    DBG$GB_SET_BREAK_FLAG                           ; 1714
                01              55  D1 00952          CMPL    STATUS, #1                                      ; 1720
                                1C  13 00955          BEQL    132$                                            ;
                                55  D5 00957          TSTL    STATUS                                          ; 1728
                                04  13 00959          BEQL    131$                                            ;
                50              55  D0 0095B          MOVL    STATUS, R0                                      ; 1730
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                                 04 0095E          RET                                                                 ;
                              01 DD 0095F 131$:    PUSHL   #1                                                          ; 1733
                 00000000'    EF 9F 00961          PUSHAB  DBG$CS_COMMA                                                ;
                              53 DD 00967          PUSHL   R3                                                          ;
00000000G   00                03 FB 00969          CALLS   #3, DBG$NMATCH                                              ;
            A4                50 E8 00970          BLBS    R0, 130$                                                    ;
                              01 DD 00973 132$:    PUSHL   #1                                                          ; 1742
                 00000000'    EF 9F 00975          PUSHAB  DBG$CS_CR                                                   ;
                              53 DD 0097B          PUSHL   R3                                                          ;
00000000G   00                03 FB 0097D          CALLS   #3, DBG$NMATCH                                              ;
            33                50 E8 00984          BLBS    R0, 134$                                                    ;
            03                56 D1 00987          CMPL    CMD_TYPE, #3                                                ; 1749
                              37 12 0098A          BNEQ    136$                                                        ;
            03        1C      AE E8 0098C          BLBS    28(SP), 133$                                                ; 1770
                           00A5 31 00990          BRW     138$                                                        ;
                              03 DD 00993 133$:    PUSHL   #3                                                          ; 1753
00000000G   00                01 FB 00995          CALLS   #1, DBG$GET_TEMPMEM                                         ;
            52                50 D0 0099C          MOVL    R0, ADVERB_NODE                                             ;
                        08    A2 D4 0099F          CLRL    8(ADVERB_NODE)                                              ;
            68                52 D0 009A2          MOVL    ADVERB_NODE, (ADVERB_LINK)                                  ;
            58          08    A2 9E 009A5          MOVAB   8(ADVERB_NODE), ADVERB_LINK                                 ;
                              62 94 009A9          CLRB    (ADVERB_NODE)                                               ; 1766
                        0C    AC DD 009AB          PUSHL   MESSAGE_VECT                                                ; 1770
                        04    A2 9F 009AE          PUSHAB  4(ADVERB_NODE)                                              ; 1769
                              53 DD 009B1          PUSHL   R3                                                          ;
00000000G   00                03 FB 009B3          CALLS   #3, DBG$NSAVE_DECIMAL_INTEGER                               ;
            03                50 E9 009BA 134$:    BLBC    R0, 135$                                                    ;
                           00D6 31 009BD          BRW     142$                                                        ;
                           00ED 31 009C0 135$:    BRW     145$                                                        ; 1775
                              01 DD 009C3 136$:    PUSHL   #1                                                          ; 1786
                 00000000'    EF 9F 009C5          PUSHAB  DBG$CS_WHEN                                                 ;
                              53 DD 009CB          PUSHL   R3                                                          ;
00000000G   00                03 FB 009CD          CALLS   #3, DBG$NMATCH                                              ;
            39                50 E9 009D4          BLBC    R0, 137$                                                    ;
                              01 DD 009D7          PUSHL   #1                                                          ; 1793
                 00000000'    EF 9F 009D9          PUSHAB  DBG$CS_L_PAREN                                              ;
                              53 DD 009DF          PUSHL   R3                                                          ;
00000000G   00                03 FB 009E1          CALLS   #3, DBG$NMATCH                                              ;
            4D                50 E9 009E8          BLBC    R0, 138$                                                    ;
                              03 DD 009EB          PUSHL   #3                                                          ;
00000000G   00                01 FB 009ED          CALLS   #1, DBG$GET_TEMPMEM                                         ;
            52                50 D0 009F4          MOVL    R0, ADVERB_NODE                                             ;
                        08    A2 D4 009F7          CLRL    8(ADVERB_NODE)                                              ;
            68                52 D0 009FA          MOVL    ADVERB_NODE, (ADVERB_LINK)                                  ;
            58          08    A2 9E 009FD          MOVAB   8(ADVERB_NODE), ADVERB_LINK                                 ;
            62                04 90 00A01          MOVB    #4, (ADVERB_NODE)                                           ; 1803
                        04    A2 9F 00A04          PUSHAB  4(ADVERB_NODE)                                              ; 1804
                              53 DD 00A07          PUSHL   R3                                                          ;
00000000G   00                02 FB 00A09          CALLS   #2, DBG$NSAVE_BREAK_BUFFER                                  ;
                              01 DD 00A10 137$:    PUSHL   #1                                                          ; 1810
                 00000000'    EF 9F 00A12          PUSHAB  DBG$CS_DO                                                   ;
                              53 DD 00A18          PUSHL   R3                                                          ;
00000000G   00                03 FB 00A1A          CALLS   #3, DBG$NMATCH                                              ;
            5E                50 E9 00A21          BLBC    R0, 141$                                                    ;
                              01 DD 00A24          PUSHL   #1                                                          ; 1817
                 00000000'    EF 9F 00A26          PUSHAB  DBG$CS_L_PAREN                                              ;
                              53 DD 00A2C          PUSHL   R3                                                          ;
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                                 03 FB 00A2E          CALLS   #3, DBG$NMATCH                                  ;
                                 50 E8 00A35          BLBS    R0, 140$                                        ;
                                 01 DD 00A38 138$:    PUSHL   #1                                              ;
                      00000000'  EF 9F 00A3A          PUSHAB  DBG$CS_CR                                       ;
                                 53 DD 00A40          PUSHL   R3                                              ;
                                 03 FB 00A42          CALLS   #3, DBG$NMATCH                                  ;
                                 50 E9 00A49          BLBC    R0, 143$                                        ;
                      000280D0   8F DD 00A4C 139$:    PUSHL   #164048                                         ;
                                 01 FB 00A52          CALLS   #1, DBG$NMAKE_ARG_VECT                          ;
                                 51 11 00A59          BRB     144$                                            ;
                                 03 DD 00A5B 140$:    PUSHL   #3                                              ;
                                 01 FB 00A5D          CALLS   #1, DBG$GET_TEMPMEM                             ;
                                 50 D0 00A64          MOVL    R0, ADVERB_NODE                                 ;
                           08    A2 D4 00A67          CLRL    8(ADVERB_NODE)                                  ;
                                 52 D0 00A6A          MOVL    ADVERB_NODE, (ADVERB_LINK)                      ;
                           08    A2 9E 00A6D          MOVAB   8(ADVERB_NODE), ADVERB_LINK                     ;
                                 05 90 00A71          MOVB    #5, (ADVERB_NODE)                               ;  1827
                           04    A2 9F 00A74          PUSHAB  4(ADVERB_NODE)                                  ;  1828
                                 53 DD 00A77          PUSHL   R3                                              ;
                                 02 FB 00A79          CALLS   #2, DBG$NSAVE_BREAK_BUFFER                      ;
                                 14 11 00A80          BRB     142$                                            ;  1829
                                 01 DD 00A82 141$:    PUSHL   #1                                              ;  1836
                      00000000'  EF 9F 00A84          PUSHAB  DBG$CS_CR                                       ;
                                 53 DD 00A8A          PUSHL   R3                                              ;
                                 03 FB 00A8C          CALLS   #3, DBG$NMATCH                                  ;
                                 50 E9 00A93          BLBC    R0, 143$                                        ;
                                 01 D0 00A96 142$:    MOVL    #1, R0                                          ;
                                    04 00A99          RET                                                     ;
                                 53 DD 00A9A 143$:    PUSHL   R3                                              ;  1837
                                 01 FB 00A9C          CALLS   #1, DBG$NNEXT_WORD                              ;
                                 50 DD 00AA3          PUSHL   R0                                              ;
                                 01 FB 00AA5          CALLS   #1, DBG$NSYNTAX_ERROR                           ;
                                 50 D0 00AAC 144$:    MOVL    R0, @MESSAGE_VECT                               ;
                                 04 D0 00AB0 145$:    MOVL    #4, R0                                          ;  1838
                                    04 00AB3          RET                                                     ;  1839

; Routine Size:  2740 bytes,    Routine Base:  DBG$CODE + 0037
```

```
;1715     1840  1 GLOBAL ROUTINE DBG$EVENT_SEMANTICS(VERB_NODE, MESSAGE_VECT) =
;1716     1841  1 !
;1717     1842  1 ! FUNCTION
;1718     1843  1 !       This routine builds the event data stuctures based on the
;1719     1844  1 !       parse tree passed via the VERB_NODE address.  This routine
;1720     1845  1 !       is called from DBGNSET.
;1721     1846  1 !
;1722     1847  1 ! INPUTS
;1723     1848  1 !       VERB_NODE:      A pointer to a DEBUG verb node, which defines,
;1724     1849  1 !                       along with the verb's descendants, the desired
;1725     1850  1 !                       command.
;1726     1851  1 !       MESSAGE_VECT:   The address of a longword to contain the address
;1727     1852  1 !                       of a message argument vector.
;1728     1853  1 !
;1729     1854  1 ! OUTPUTS
;1730     1855  1 !       The event data structure(s) are updated to include the new event,
;1731     1856  1 !       and may include.
;1732     1857  1 !
;1733     1858  1 !           EVENT$CMD_QUEUE,
;1734     1859  1 !           EVENT$WHEN_QUEUE,
;1735     1860  1 !           EVENT$DO_LIST_QUEUE,
;1736     1861  1 !           EVENT$PAGE_QUEUE
;1737     1862  1 !
;1738     1863  1 !       STS$K_SEVERE is return on error, otherwise STS$K_SUCCESS
;1739     1864  1 !
;1740     1865  2     BEGIN
;1741     1866  2
;1742     1867  2     MAP
;1743     1868  2         VERB_NODE :     REF DBG$VERB_NODE;      ! Verb node pointer
;1744     1869  2
;1745     1870  2     LOCAL
;1746     1871  2         DUMMY,
;1747     1872  2         EVENT_QUEUE :   QUEUE_HEAD,             ! Working queue head
;1748     1873  2         QUEUE_ENTRY :   REF EVENT$EVENT_DESCRIPTOR, ! Event queue entry pointer
;1749     1874  2         NEXTQ_ENTRY :   REF EVENT$EVENT_DESCRIPTOR, ! Event queue entry pointer
;1750     1875  2         EVENT_ENTRY :   REF EVENT$EVENT_DESCRIPTOR, ! Event entry pointer
;1751     1876  2         DO_ENTRY :      REF EVENT$DO_LIST_DESCRIPTOR, ! DO List entry pointer
;1752     1877  2         WHEN_ENTRY :    REF EVENT$WHEN_DESCRIPTOR, ! WHEN entry pointer
;1753     1878  2         ADVERB_NODE :   REF DBG$ADVERB_NODE,    ! Adverb node link
;1754     1879  2         NOUN_NODE :     REF DBG$NOUN_NODE,      ! Noun node link
;1755     1880  2
;1756     1881  2         PRIMARY :       REF DBG$PRIMARY,        ! Event primary descriptor
;1757     1882  2         VALUE :         REF DBG$VALDESC,        ! Event value descriptor
;1758     1883  2
;1759     1884  2         ADDRESS :       VECTOR [2],             ! Event address
;1760     1885  2         ADR_TYP,                                ! Event address type
;1761     1886  2         LENGTH,                                 ! Event value length
;1762     1887  2
;1763     1888  2         STRING :        REF VECTOR [, BYTE],    ! Text pointer
;1764     1889  2         COUNTER;                                ! Counter variable
;1765     1890  2
;1766     1891  2
;1767     1892  2     ! Initialize the working queue to be empty.
;1768     1893  2     !
;1769     1894  2     EVENT_QUEUE [L_QUEUE_FLINK] = EVENT_QUEUE;
;1770     1895  2     EVENT_QUEUE [L_QUEUE_BLINK] = EVENT_QUEUE;
;1771     1896  2
```

```
;  1772          1897  2
;  1773          1898  2      ! Get an event descriptor from permanent memory, and
;  1774          1899  2      ! link it into the working queue. Also inititialize the
;  1775          1900  2      ! inside queue header.
;  1776          1901  2      !
;  1777          1902  2      EVENT_ENTRY = DBG$GET_MEMORY (EVENT$K_EVENT_DESCRIPTOR_SIZE);
;  1778          1903  2      INSQUE (.EVENT_ENTRY, EVENT_QUEUE);
;  1779          1904  2      EVENT_ENTRY[EVENT$L_EXC_FLINK] = .EVENT_ENTRY;
;  1780          1905  2      EVENT_ENTRY[EVENT$L_EXC_BLINK] = .EVENT_ENTRY;
;  1781          1906  2
;  1782          1907  2
;  1783          1908  2      ! Set the event's command type, found in the verb.
;  1784          1909  2      !
;  1785          1910  2      SELECTONE .VERB_NODE [DBG$B_VERB_COMPOSITE] OF
;  1786          1911  2          SET
;  1787          1912  2
;  1788          1913  2          [EVENT$K_SET_BREAK]:
;  1789          1914  2              EVENT_ENTRY [EVENT$B_CMD_TYPE] = EVENT$K_TYPE_BREAK;
;  1790          1915  2
;  1791          1916  2          [EVENT$K_SET_BREAK_EXC]:
;  1792          1917  3              BEGIN
;  1793          1918  3              EVENT_ENTRY [EVENT$B_CMD_TYPE] = EVENT$K_TYPE_BREAK;
;  1794          1919  3              EVENT_ENTRY [EVENT$B_CMD_KIND] = EVENT$K_KIND_EXC;
;  1795          1920  2              END;
;  1796          1921  2
;  1797          1922  2          [EVENT$K_SET_TRACE]:
;  1798          1923  2              EVENT_ENTRY [EVENT$B_CMD_TYPE] = EVENT$K_TYPE_TRACE;
;  1799          1924  2
;  1800          1925  2          [EVENT$K_SET_WATCH]:
;  1801          1926  3              BEGIN
;  1802          1927  3              EVENT_ENTRY [EVENT$B_CMD_TYPE] = EVENT$K_TYPE_WATCH;
;  1803          1928  3              EVENT_ENTRY [EVENT$B_CMD_KIND] = EVENT$K_KIND_ACC;
;  1804          1929  3              EVENT_ENTRY [EVENT$B_SUB_KIND] = EVENT$K_ACC_MDFY
;  1805          1930  2              END;
;  1806          1931  2
;  1807          1932  2          [EVENT$K_SET_STEP,
;  1808          1933  2           EVENT$K_STEP]:
;  1809          1934  2              EVENT_ENTRY [EVENT$B_CMD_TYPE] = EVENT$K_TYPE_STEPS;
;  1810          1935  2
;  1811          1936  2          [OTHERWISE]:
;  1812          1937  2              $DBG_ERROR('DBGEVENT\EVENT_SEMANTICS 10');
;  1813          1938  2
;  1814          1939  2          TES;
;  1815          1940  2
;  1816          1941  2
;  1817          1942  2      ! Initialize the Deleted, Silent, Once (Temporary), Threaded, and
;  1818          1943  2      ! Has Value Descriptor flags.
;  1819          1944  2      !
;  1820          1945  2      EVENT_ENTRY [EVENT$B_CMD_FLAGS] = 0;
;  1821          1946  2
;  1822          1947  2
;  1823          1948  2      ! Initialize the step-type flags.  If the command is STEP or SET STEP,
;  1824          1949  2      ! we set up the Event Entry using the current default stepping modes.
;  1825          1950  2      !
;  1826          1951  2      EVENT_ENTRY[EVENT$L_STEP_FLAGS] = 0;
;  1827          1952  2      IF .EVENT_ENTRY [EVENT$B_CMD_TYPE] EQLU EVENT$K_TYPE_STEPS
;  1828          1953  2      THEN
```

```
;  1829          1954  3          BEGIN
;  1830          1955  3          EVENT_ENTRY[EVENT$V_STEP_LINE] = .DBG$GB_STP_PTR[EVENT$V_STEPPING_LINE];
;  1831          1956  3          EVENT_ENTRY[EVENT$V_STEP_OVER] = .DBG$GB_STP_PTR[EVENT$V_STEPPING_OVER];
;  1832          1957  3          EVENT_ENTRY[EVENT$V_STEP_SOURCE] =
;  1833          1958  3                              .DBG$GB_STP_PTR[EVENT$V_STEPPING_SOURCE];
;  1834          1959  3          EVENT_ENTRY[EVENT$V_OVRD_SOURCE] = FALSE;
;  1835          1960  3          EVENT_ENTRY[EVENT$V_STEP_NOSYSTEM] =
;  1836          1961  3                              .DBG$GB_STP_PTR [EVENT$V_STEPPING_NOSYSTEM];
;  1837          1962  3          EVENT_ENTRY[EVENT$V_STEP_NOSILENT] =
;  1838          1963  3                              .DBG$GB_STP_PTR [EVENT$V_STEPPING_NOSILENT];
;  1839          1964  3          END
;  1840          1965  3
;  1841          1966  3
;  1842          1967  3      ! If the command is SET BREAK, SET TRACE, or SET WATCH, we initialize the
;  1843          1968  3      ! various flags to FALSE.
;  1844          1969  3      !
;  1845          1970  2      ELSE
;  1846          1971  3          BEGIN
;  1847          1972  3          EVENT_ENTRY[EVENT$V_STEP_LINE] = FALSE;
;  1848          1973  3          EVENT_ENTRY[EVENT$V_STEP_OVER] = FALSE;
;  1849          1974  3          EVENT_ENTRY[EVENT$V_STEP_SOURCE] = FALSE;
;  1850          1975  3          EVENT_ENTRY[EVENT$V_OVRD_SOURCE] = FALSE;
;  1851          1976  3          EVENT_ENTRY[EVENT$V_STEP_NOSYSTEM] = FALSE;
;  1852          1977  3          EVENT_ENTRY[EVENT$V_STEP_NOSILENT] = FALSE;
;  1853          1978  2          END;
;  1854          1979  2
;  1855          1980  2
;  1856          1981  2      ! Initialize the Primary pointer to NULL.
;  1857          1982  2      !
;  1858          1983  2      EVENT_ENTRY [EVENT$L_PRIMARY] = 0;
;  1859          1984  2
;  1860          1985  2
;  1861          1986  2      ! Initialize the event entry /AFTER count to 1.
;  1862          1987  2      !
;  1863          1988  2      EVENT_ENTRY [EVENT$L_AFTER_COUNT] = 1;
;  1864          1989  2
;  1865          1990  2
;  1866          1991  2      ! Initialize the WHEN and DO List pointers to NULL.
;  1867          1992  2      !
;  1868          1993  2      EVENT_ENTRY [EVENT$L_WHEN] = 0;
;  1869          1994  2      EVENT_ENTRY [EVENT$L_DO] = 0;
;  1870          1995  2
;  1871          1996  2
;  1872          1997  2      ! Point to the verb's noun list.
;  1873          1998  2      !
;  1874          1999  2      NOUN_NODE = .VERB_NODE [DBG$L_VERB_OBJECT_PTR];
;  1875          2000  2
;  1876          2001  2
;  1877          2002  2      ! Point to the verb's adverb list.
;  1878          2003  2      !
;  1879          2004  2      ADVERB_NODE = .VERB_NODE [DBG$L_VERB_ADVERB_PTR];
;  1880          2005  2
;  1881          2006  2
;  1882          2007  2      ! For each existing adverb, process it.
;  1883          2008  2      !
;  1884          2009  2      WHILE .ADVERB_NODE NEQA 0 DO
;  1885          2010  3          BEGIN
```

```
;  1886          2011  3
;  1887          2012  3
;  1888          2013  3          ! Process adverbs based on the literal set by the
;  1889          2014  3          ! syntactic processing.
;  1890          2015  3          !
;  1891          2016  3          SELECTONE .ADVERB_NODE [DBG$B_ADVERB_LITERAL] OF
;  1892          2017  3              SET
;  1893          2018  3
;  1894          2019  3
;  1895          2020  3              ! Process the /AFTER : <n> adverb.
;  1896          2021  3              !
;  1897          2022  3              [ADVERB_AFTER]:
;  1898          2023  3                  EVENT_ENTRY [EVENT$L_AFTER_COUNT] =
;  1899          2024  3                      .ADVERB_NODE [DBG$L_ADVERB_VALUE];
;  1900          2025  3
;  1901          2026  3
;  1902          2027  3              ! Process the /TEMPORARY adverb.
;  1903          2028  3              !
;  1904          2029  3              [ADVERB_TEMPORARY]:
;  1905          2030  3                  EVENT_ENTRY [EVENT$V_ONCE_ONLY] = TRUE;
;  1906          2031  3
;  1907          2032  3
;  1908          2033  3              ! Process the /SILENT adverb.
;  1909          2034  3              !
;  1910          2035  3              [ADVERB_SILENT]:
;  1911          2036  4                  BEGIN
;  1912          2037  4                  EVENT_ENTRY [EVENT$V_SILENT] = TRUE;
;  1913          2038  4                  EVENT_ENTRY [EVENT$V_STEP_NOSILENT] = FALSE;
;  1914          2039  4                  EVENT_ENTRY [EVENT$V_OVRD_NOSILENT] = TRUE;
;  1915          2040  3                  END;
;  1916          2041  3
;  1917          2042  3
;  1918          2043  3              ! Process the /NOSILENT adverb.
;  1919          2044  3              !
;  1920          2045  3              [ADVERB_NOSILENT]:
;  1921          2046  4                  BEGIN
;  1922          2047  4                  EVENT_ENTRY [EVENT$V_SILENT] = FALSE;
;  1923          2048  4                  EVENT_ENTRY [EVENT$V_STEP_NOSILENT] = TRUE;
;  1924          2049  4                  EVENT_ENTRY [EVENT$V_OVRD_NOSILENT] = TRUE;
;  1925          2050  3                  END;
;  1926          2051  3
;  1927          2052  3
;  1928          2053  3              ! Process the WHEN adverb.
;  1929          2054  3              !
;  1930          2055  3              [ADVERB_WHEN]:
;  1931          2056  4                  BEGIN
;  1932          2057  4                  LOCAL
;  1933          2058  4                      LENGTH;
;  1934          2059  4
;  1935          2060  4                  ! Get a WHEN descriptor from permanent memory, and
;  1936          2061  4                  ! link it into the WHEN queue.
;  1937          2062  4                  !
;  1938          2063  4                  WHEN_ENTRY = DBG$GET_MEMORY (EVENT$K_WHEN_DESCRIPTOR_SIZE);
;  1939          2064  4                  INSQUE (.WHEN_ENTRY, EVENT$WHEN_QUEUE);
;  1940          2065  4
;  1941          2066  4
;  1942          2067  4                  ! Point the event entry to the WHEN entry.
```

```
;  1943          2068  4                !
;  1944          2069  4                EVENT_ENTRY [EVENT$L_WHEN] = .WHEN_ENTRY;
;  1945          2070  4
;  1946          2071  4
;  1947          2072  4                ! Put a <cr> at the end of the WHEN string.
;  1948          2073  4                !
;  1949          2074  4                STRING = .ADVERB_NODE [DBG$L_ADVERB_VALUE];
;  1950          2075  4                LENGTH = .(.STRING)<0,16,0>;
;  1951          2076  4                STRING [.LENGTH+1] = DBG$K_CAR_RETURN;
;  1952          2077  4
;  1953          2078  4
;  1954          2079  4                ! Fill in the WHEN entry.
;  1955          2080  4                !
;  1956          2081  4                WHEN_ENTRY [EVENT$L_WHEN_COUNT] = 1;
;  1957          2082  4                WHEN_ENTRY [EVENT$L_WHEN_POINT] = .STRING;
;  1958          2083  3                END;
;  1959          2084  3
;  1960          2085  3
;  1961          2086  3            ! Process the DO adverb.
;  1962          2087  3            !
;  1963          2088  3            [ADVERB_DO]:
;  1964          2089  4                BEGIN
;  1965          2090  4                LOCAL
;  1966          2091  4                    LENGTH;
;  1967          2092  4
;  1968          2093  4
;  1969          2094  4                ! Get a DO LIST descriptor from permanent memory, and
;  1970          2095  4                ! link it into the DO LIST queue.
;  1971          2096  4                !
;  1972          2097  4                DO_ENTRY = DBG$GET_MEMORY (EVENT$K_DO_LIST_DESCRIPTOR_SIZE);
;  1973          2098  4                INSQUE (.DO_ENTRY, EVENT$DO_LIST_QUEUE);
;  1974          2099  4
;  1975          2100  4
;  1976          2101  4                ! Point the event entry to the DO LIST entry.
;  1977          2102  4                !
;  1978          2103  4                EVENT_ENTRY [EVENT$L_DO] = .DO_ENTRY;
;  1979          2104  4
;  1980          2105  4
;  1981          2106  4                ! Put a <cr> at the end of the DO string.
;  1982          2107  4                !
;  1983          2108  4                STRING = .ADVERB_NODE [DBG$L_ADVERB_VALUE];
;  1984          2109  4                LENGTH = .(.STRING)<0,16,0>;
;  1985          2110  4                STRING [.LENGTH+1] = DBG$K_CAR_RETURN;
;  1986          2111  4
;  1987          2112  4
;  1988          2113  4                ! Fill in the DO entry.
;  1989          2114  4                !
;  1990          2115  4                DO_ENTRY [EVENT$L_DO_LIST_COUNT] = 1;
;  1991          2116  4                DO_ENTRY [EVENT$L_DO_LIST_POINT] = .STRING;
;  1992          2117  3                END;
;  1993          2118  3
;  1994          2119  3
;  1995          2120  3            ! Process the /READ, /WRITE, /MODIFY, /EXECUTE, and /RETURN
;  1996          2121  3            ! access adverbs.
;  1997          2122  3            !
;  1998          2123  3            [ADVERB_READ,ADVERB_WRITE,ADVERB_MODIFY,
;  1999          2124  3             ADVERB_EXECUTE,ADVERB_RETURN]:
```

```
;  2000          2125  4                BEGIN
;  2001          2126  4
;  2002          2127  4
;  2003          2128  4                ! Define the command kind to be access.
;  2004          2129  4                !
;  2005          2130  4                EVENT_ENTRY [EVENT$B_CMD_KIND] = EVENT$K_KIND_ACC;
;  2006          2131  4
;  2007          2132  4
;  2008          2133  4                ! Define the sub-kind as appropriate.
;  2009          2134  4                !
;  2010          2135  4                EVENT_ENTRY [EVENT$B_SUB_KIND] =
;  2011          2136  5                    (SELECTONE .ADVERB_NODE [DBG$B_ADVERB_LITERAL] OF
;  2012          2137  5                            SET
;  2013          2138  5                            [ADVERB_READ]:
;  2014          2139  5                                EVENT$K_ACC_READ;
;  2015          2140  5                            [ADVERB_WRITE]:
;  2016          2141  5                                EVENT$K_ACC_WRIT;
;  2017          2142  5                            [ADVERB_MODIFY]:
;  2018          2143  5                                EVENT$K_ACC_MDFY;
;  2019          2144  5                            [ADVERB_EXECUTE]:
;  2020          2145  5                                EVENT$K_ACC_EXEC;
;  2021          2146  5                            [ADVERB_RETURN]:
;  2022          2147  5                                EVENT$K_ACC_RTRN;
;  2023          2148  5                            [OTHERWISE]:
;  2024          2149  5                                $DBG_ERROR('DBGEVENT\EVENT_SEMANTICS 20');
;  2025          2150  5                            TES
;  2026          2151  4                    );
;  2027          2152  3                END;
;  2028          2153  3
;  2029          2154  3
;  2030          2155  3            ! Process the /EXCEPTION adverb.
;  2031          2156  3            !
;  2032          2157  3            [ADVERB_EXCEPTION]:
;  2033          2158  4                BEGIN
;  2034          2159  4                EVENT_ENTRY [EVENT$B_CMD_KIND] = EVENT$K_KIND_EXC;
;  2035          2160  4                EVENT_ENTRY [EVENT$B_SUB_KIND] = EVENT$K_EXC_EXC;
;  2036          2161  3                END;
;  2037          2162  3
;  2038          2163  3
;  2039          2164  3            ! Process the /CALL, /RETURN, /BRANCH, /OPCODE, /INSTRUCTION and
;  2040          2165  3            ! /LINE instruction-kind adverbs.
;  2041          2166  3            !
;  2042          2167  3            [ADVERB_CALL,
;  2043          2168  3             ADVERB_RETURN,
;  2044          2169  3             ADVERB_BRANCH,
;  2045          2170  3             ADVERB_OPCODE,
;  2046          2171  3             ADVERB_INSTRUCTION,
;  2047          2172  3             ADVERB_LINE]:
;  2048          2173  4                BEGIN
;  2049          2174  4                LOCAL
;  2050          2175  4                    LINENO,      ! Line number returned from PC_TO_LINE
;  2051          2176  4                    MODRST,      ! Module RST returned from PC_TO_LINE
;  2052          2177  4                    STATUS,      ! Status returned from PC_TO_LINE
;  2053          2178  4                    STMTNO;      ! Statement number returned from PC_TO_LINE
;  2054          2179  4
;  2055          2180  4                ! Define the event kind to be instruction.
;  2056          2181  4                !
```

```
;  2057          2182  4              EVENT_ENTRY [EVENT$B_CMD_KIND] = EVENT$K_KIND_INS;
;  2058          2183  4
;  2059          2184  4
;  2060          2185  4              ! Define the subkind according to the adverb.
;  2061          2186  4              !
;  2062          2187  4              EVENT_ENTRY [EVENT$B_SUB_KIND] =
;  2063          2188  5                  (SELECTONE .ADVERB_NODE [DBG$B_ADVERB_LITERAL] OF
;  2064          2189  5                      SET
;  2065          2190  5                      [ADVERB_CALL]:
;  2066          2191  5                          EVENT$K_INS_CALL;
;  2067          2192  5                      [ADVERB_BRANCH]:
;  2068          2193  5                          EVENT$K_INS_BRAN;
;  2069          2194  5                      [ADVERB_LINE]:
;  2070          2195  5                          EVENT$K_INS_LINE;
;  2071          2196  5                      [ADVERB_OPCODE]:
;  2072          2197  5                          EVENT$K_INS_USER;
;  2073          2198  5                      [ADVERB_INSTRUCTION]:
;  2074          2199  5                          EVENT$K_INS_EVRY;
;  2075          2200  5                      [OTHERWISE]:
;  2076          2201  5                          $DBG_ERROR('DBGEVENT\EVENT_SEMANTICS 30');
;  2077          2202  5                      TES
;  2078          2203  4                  );
;  2079          2204  4
;  2080          2205  4              ! Set the line stepping flag appropriately.
;  2081          2206  4              !
;  2082          2207  4              EVENT_ENTRY [EVENT$V_STEP_LINE] =
;  2083          2208  4                  (.EVENT_ENTRY [EVENT$B_SUB_KIND] EQLU EVENT$K_INS_LINE);
;  2084          2209  4
;  2085          2210  4
;  2086          2211  4              ! We're not in the middle of a step over....
;  2087          2212  4              !
;  2088          2213  4              EVENT_ENTRY [EVENT$V_STEP_BPT] = FALSE;
;  2089          2214  4
;  2090          2215  4
;  2091          2216  4              ! Initialize the LO and HI PC values by calling PC_TO_LINE
;  2092          2217  4              ! with the current PC. This gives us a PC range for the
;  2093          2218  4              ! line number containing the current PC. This PC range
;  2094          2219  4              ! will be used later to determine when a step by line ends.
;  2095          2220  4              ! If PC_TO_LINE returns FALSE we are not in a line. In that
;  2096          2221  4              ! case, initialize LO and HI PC to 1 and 0, so we will
;  2097          2222  4              ! immediately be out of the "range" the next time we check.
;  2098          2223  4              !
;  2099          2224  4              STATUS = 0;
;  2100          2225  4              MODRST = 0;
;  2101          2226  4              IF .EVENT_ENTRY [EVENT$B_SUB_KIND] EQLU EVENT$K_INS_LINE
;  2102          2227  4              THEN
;  2103          2228  4                  STATUS = DBG$PC_TO_LINE_LOOKUP(
;  2104          2229  4                              .DBG$RONFRAME[DBG$L_USER_PC],
;  2105          2230  4                              LINENO,
;  2106          2231  4                              STMTNO,
;  2107          2232  4                              EVENT_ENTRY[EVENT$L_STEP_LO_PC],
;  2108          2233  4                              EVENT_ENTRY[EVENT$L_STEP_HI_PC],
;  2109          2234  4                              MODRST);
;  2110          2235  4              IF NOT .STATUS
;  2111          2236  4              THEN
;  2112          2237  4                  BEGIN
;  2113          2238  5
```

```
;  2114          2239  5                 EVENT_ENTRY[EVENT$L_STEP_LO_PC] = 1;
;  2115          2240  5                 EVENT_ENTRY[EVENT$L_STEP_HI_PC] = 0;
;  2116          2241  4                 END;
;  2117          2242  3             END;
;  2118          2243
;  2119          2244
;  2120          2245  3         ! Process the /SOURCE adverb.
;  2121          2246  3         !
;  2122          2247  3         [ADVERB_SOURCE]:
;  2123          2248  4             BEGIN
;  2124          2249  4             EVENT_ENTRY [EVENT$V_STEP_SOURCE] = TRUE;
;  2125          2250  4             EVENT_ENTRY [EVENT$V_OVRD_SOURCE] = TRUE;
;  2126          2251  4             END;
;  2127          2252  3
;  2128          2253  3
;  2129          2254  3         ! Process the /NOSOURCE adverb.
;  2130          2255  3         !
;  2131          2256  3         [ADVERB_NOSOURCE]:
;  2132          2257  4             BEGIN
;  2133          2258  4             EVENT_ENTRY [EVENT$V_STEP_SOURCE] = FALSE;
;  2134          2259  4             EVENT_ENTRY [EVENT$V_OVRD_SOURCE] = TRUE;
;  2135          2260  4             END;
;  2136          2261  3
;  2137          2262  3
;  2138          2263  3         ! Process the /SYSTEM adverb.
;  2139          2264  3         !
;  2140          2265  3         [ADVERB_SYSTEM]:
;  2141          2266  4             BEGIN
;  2142          2267  4             EVENT_ENTRY [EVENT$v_STEP_NOSYSTEM] = FALSE;
;  2143          2268  4             EVENT_ENTRY [EVENT$V_OVRD_NOSYSTEM] = TRUE;
;  2144          2269  4             END;
;  2145          2270  3
;  2146          2271  3
;  2147          2272  3         ! Process the /NOSYSTEM adverb.
;  2148          2273  3         !
;  2149          2274  3         [ADVERB_NOSYSTEM]:
;  2150          2275  4             BEGIN
;  2151          2276  4             EVENT_ENTRY [EVENT$V_STEP_NOSYSTEM] = TRUE;
;  2152          2277  4             EVENT_ENTRY [EVENT$V_OVRD_NOSYSTEM] = TRUE;
;  2153          2278  4             END;
;  2154          2279  3
;  2155          2280  3
;  2156          2281  3         ! Process the /INTO adverb.
;  2157          2282  3         !
;  2158          2283  3         [ADVERB_INTO]:
;  2159          2284  4             BEGIN
;  2160          2285  4             EVENT_ENTRY [EVENT$V_STEP_OVER] = FALSE;
;  2161          2286  4             EVENT_ENTRY [EVENT$V_OVRD_OVER] = TRUE;
;  2162          2287  4             END;
;  2163          2288  3
;  2164          2289  3
;  2165          2290  3         ! Process the /OVER adverb.
;  2166          2291  3         !
;  2167          2292  3         [ADVERB_OVER]:
;  2168          2293  4             BEGIN
;  2169          2294  4             EVENT_ENTRY [EVENT$V_STEP_OVER] = TRUE;
;  2170          2295  4             EVENT_ENTRY [EVENT$V_OVRD_OVER] = TRUE;
```

```
;  2171          2296  3                END;
;  2172          2297  3
;  2173          2298  3
;  2174          2299  3            ! An invalid adverb literal - yell !
;  2175          2300  3            !
;  2176          2301  3            [OTHERWISE]:
;  2177          2302  3                $DBG_ERROR('DBGEVENT\EVENT_SEMANTICS 40');
;  2178          2303  3
;  2179          2304  3            TES;
;  2180          2305  3
;  2181          2306  3
;  2182          2307  3        ! Point to the next adverb in the list.
;  2183          2308  3        !
;  2184          2309  3        ADVERB_NODE = .ADVERB_NODE [DBG$L_ADVERB_LINK];
;  2185          2310  2        END;
;  2186          2311  2
;  2187          2312  2
;  2188          2313  2    ! Now, based on the command kind (access or instruction),
;  2189          2314  2    ! process the noun node list.
;  2190          2315  2    !
;  2191          2316  2    SELECTONE .EVENT_ENTRY [EVENT$B_CMD_KIND] OF
;  2192          2317  2        SET
;  2193          2318  2
;  2194          2319  2
;  2195          2320  2        ! Access events....
;  2196          2321  2        !
;  2197          2322  2        [EVENT$K_KIND_ACC]:
;  2198          2323  2
;  2199          2324  2            IF .EVENT_ENTRY [EVENT$B_CMD_TYPE] NEQU EVENT$K_TYPE_STEPS
;  2200          2325  2            THEN
;  2201          2326  3                BEGIN
;  2202          2327  3
;  2203          2328  3                LOCAL
;  2204          2329  3                    SYMID_LIST; ! Pointer to SYMID
;  2205          2330  3
;  2206          2331  3
;  2207          2332  3                ! Make sure there's a noun node present.
;  2208          2333  3                !
;  2209          2334  3                IF .NOUN_NODE EQLA 0
;  2210          2335  3                THEN
;  2211          2336  3                    $DBG_ERROR('DBGEVENT\EVENT_SEMANTICS 50');
;  2212          2337  3
;  2213          2338  3
;  2214          2339  3                ! Build duplicate event entries, one for each
;  2215          2340  3                ! address found in the noun node list.
;  2216          2341  3                !
;  2217          2342  3                WHILE TRUE DO
;  2218          2343  4                    BEGIN
;  2219          2344  4
;  2220          2345  4
;  2221          2346  4                    ! Obtain the primary descriptor.
;  2222          2347  4                    !
;  2223          2348  4                    PRIMARY = .NOUN_NODE [DBG$L_NOUN_VALUE];
;  2224          2349  4
;  2225          2350  4
;  2226          2351  4                    ! Obtain the symid list, and lock it.
;  2227          2352  4                    !
```

```
;  2228     2353  4          DBG$NGET_SYMID (.PRIMARY, SYMID_LIST, DUMMY);
;  2229     2354  4          DBG$STA_LOCK_SYMID (.SYMID_LIST);
;  2230     2355  4
;  2231     2356  4
;  2232     2357  4          ! Save the primary descriptor by making a copy of the primary
;  2233     2358  4          ! descriptor out of permanent storage.
;  2234     2359  4          !
;  2235     2360  4          DBG$NCOPY_DESC (.PRIMARY, EVENT_ENTRY[EVENT$L_PRIMARY],
;  2236     2361  4                                          DUMMY, TRUE);
;  2237     2362  4
;  2238     2363  4
;  2239     2364  4          ! Now, get and save the VMS descriptor. (We do this
;  2240     2365  4          ! after saving the Primary since PRIM_TO_VAL sometimes
;  2241     2366  4          ! modifies the Primary.)
;  2242     2367  4          !
;  2243     2368  4          DBG$PRIM_TO_VAL (.PRIMARY, DBG$K_V_VALUE_DESC, VALUE);
;  2244     2369  4          CH$MOVE (12, VALUE [DBG$A_VALUE_VMSDESC],
;  2245     2370  4                       EVENT_ENTRY [EVENT$A_VMSDESC]);
;  2246     2371  4
;  2247     2372  4
;  2248     2373  4          ! Next, we determine the address where we put the
;  2249     2374  4          ! breakpoint. We pass our Primary into DBG$NGET_ADDRESS.
;  2250     2375  4          ! For routines and entry points, NGET_ADDRESS takes a
;  2251     2376  4          ! flag that says to return the "break address" instead
;  2252     2377  4          ! of the start address. For routines, the break address
;  2253     2378  4          ! is after the routine prolog (or, if there is no prolog,
;  2254     2379  4          ! it is at routine_start+2).
;  2255     2380  4          !
;  2256     2381  4          EVENT_ENTRY [EVENT$V_BREAK_ADDRESS] = FALSE;
;  2257     2382  5          IF ((.EVENT_ENTRY [EVENT$B_CMD_TYPE] EQL EVENT$K_TYPE_BREAK) OR
;  2258     2383  5              (.EVENT_ENTRY [EVENT$B_CMD_TYPE] EQL EVENT$K_TYPE_TRACE))
;  2259     2384  4                                  AND
;  2260     2385  5              (.EVENT_ENTRY [EVENT$B_SUB_KIND] NEQ EVENT$K_ACC_RTRN)
;  2261     2386  4          THEN
;  2262     2387  5              BEGIN
;  2263     2388  6              IF  (.PRIMARY[DBG$B_DHDR_TYPE] EQL DBG$K_PRIMARY_DESC)
;  2264     2389  5                                  AND
;  2265     2390  6                 ((.PRIMARY[DBG$B_DHDR_KIND] EQL RST$K_ROUTINE) OR
;  2266     2391  6                  (.PRIMARY[DBG$B_DHDR_KIND] EQL RST$K_ENTRY))
;  2267     2392  5              THEN
;  2268     2393  5                  EVENT_ENTRY [EVENT$V_BREAK_ADDRESS] = TRUE;
;  2269     2394  4              END;
;  2270     2395  4
;  2271     2396  4
;  2272     2397  4          ! Get the address where we place the breakpoint.
;  2273     2398  4          !
;  2274     2399  4          IF NOT DBG$NGET_ADDRESS(.PRIMARY, ADDRESS[0], ADR_TYP,
;  2275     2400  4                    .EVENT_ENTRY[EVENT$V_BREAK_ADDRESS], .MESSAGE_VECT)
;  2276     2401  4          THEN
;  2277     2402  4              RETURN STS$K_SEVERE;
;  2278     2403  4          EVENT_ENTRY [EVENT$L_ADDRESS] = .ADDRESS[0];
;  2279     2404  4
;  2280     2405  4
;  2281     2406  4          ! We may still need to adjust the address of the breakpoint
;  2282     2407  4          ! by +2 to get past the entry mask of a routine. This
;  2283     2408  4          ! will be the case if the user set a break on an absolute
;  2284     2409  4          ! address which happens to be the start of a routine,
```

```
;  2285          2410  4          ! or on data of type ZEM, BPV, or BLV (e.g., if
;  2286          2411  4          ! the address of a routine is passed as a parameter and
;  2287          2412  4          ! and a breakpoint is set on that passed-in routine, then
;  2288          2413  4          ! the Primary describe data of type BPV). These cases
;  2289          2414  4          ! are not covered by the above "break address" code.
;  2290          2415  4          !
;  2291          2416  4          IF NOT .EVENT_ENTRY [EVENT$V_BREAK_ADDRESS]
;  2292          2417  4          THEN
;  2293          2418  5              BEGIN
;  2294          2419  5
;  2295          2420  5
;  2296          2421  5              ! If we can determine from the static address table
;  2297          2422  5              ! that this is an entry point, then add two to get
;  2298          2423  5              ! past the entry mask.
;  2299          2424  5              !
;  2300          2425  5              IF DBG$IS_IT_ENTRY (.ADDRESS [0])
;  2301          2426  5              THEN
;  2302          2427  5                  EVENT_ENTRY [EVENT$L_ADDRESS] = .ADDRESS[0] + 2
;  2303          2428  5
;  2304          2429  5              ELSE
;  2305          2430  6                  BEGIN
;  2306          2431  6
;  2307          2432  6
;  2308          2433  6                  ! If the data type in the value descriptor says
;  2309          2434  6                  ! that we have an entry mask, then add two to
;  2310          2435  6                  ! get past the entry mask.
;  2311          2436  6                  !
;  2312          2437  6                  IF (.VALUE[DBG$B_VALUE_DTYPE] EQL DSC$K_DTYPE_ZEM) OR
;  2313          2438  6                     (.VALUE[DBG$B_VALUE_DTYPE] EQL DSC$K_DTYPE_BPV) OR
;  2314          2439  7                     (.VALUE[DBG$B_VALUE_DTYPE] EQL DSC$K_DTYPE_BLV)
;  2315          2440  6                  THEN
;  2316          2441  6                      EVENT_ENTRY [EVENT$L_ADDRESS] = .ADDRESS[0] + 2;
;  2317          2442  5                  END;
;  2318          2443  4              END;
;  2319          2444  4
;  2320          2445  4
;  2321          2446  4          ! Make sure that we can access the value indicated.
;  2322          2447  4          !
;  2323          2448  4          DBG$READ_ACCESS (.EVENT_ENTRY [EVENT$L_ADDRESS],
;  2324          2449  5              (DBG$DATA_LENGTH(EVENT_ENTRY[EVENT$A_VMSDESC]) + 7)
;  2325          2450  4                                                          ^ -3);
;  2326          2451  4
;  2327          2452  4
;  2328          2453  4          ! Process the event's address additionally based on the
;  2329          2454  4          ! access type.
;  2330          2455  4          !
;  2331          2456  4          SELECTONE .EVENT_ENTRY [EVENT$B_SUB_KIND] OF
;  2332          2457  4              SET
;  2333          2458  4              [EVENT$K_ACC_EXEC,
;  2334          2459  4               EVENT$K_ACC_RTRN]:
;  2335          2460  5                  BEGIN
;  2336          2461  5                  LOCAL
;  2337          2462  5                      EVENT_ADDRESS : REF VECTOR [, BYTE];
;  2338          2463  5
;  2339          2464  5                  EVENT_ADDRESS = .EVENT_ENTRY [EVENT$L_ADDRESS];
;  2340        P 2465  5                  IF NOT WRITE_OPCODE (.EVENT_ADDRESS,
;  2341        P 2466  5                                       .EVENT_ADDRESS [0]
```

```
;  2342          2467  6                                )
;  2343          2468  5                        THEN
;  2344          2469  6                            BEGIN
;  2345          2470  6                            SIGNAL (DBG$_NOACCESSW, 1, .EVENT_ADDRESS);
;  2346          2471  6                            RETURN STS$K_SEVERE;
;  2347          2472  5                            END;
;  2348          2473  5
;  2349          2474  5
;  2350          2475  5                        ! Mark the fact We are at /RET .PC, for we want
;  2351          2476  5                        ! to take the RET SS$_ROPRAND fault starting
;  2352          2477  5                        ! from current PC.  Normally, we won't take
;  2353          2478  5                        ! the event if we are at current PC.
;  2354          2479  5                        !
;  2355          2480  5                        ! IF .EVENT_ADDRESS EQL .DBG$RUNFRAME[DBG$L_USER_PC]
;  2356          2481  5                        ! THEN
;  2357          2482  5                        !   EVENT_ENTRY [EVENT$V_RET_AT_PC] = TRUE;
;  2358          2483  4                        END;
;  2359          2484  4
;  2360          2485  4                    [EVENT$K_ACC_MDFY]:
;  2361          2486  4
;  2362          2487  4
;  2363          2488  4                        ! Process /MODIFY types by building and saving a non-
;  2364          2489  4                        ! volatile value descriptor (i.e. a copy) of the value
;  2365          2490  4                        ! indicated.
;  2366          2491  4                        !
;  2367          2492  5                        BEGIN
;  2368          2493  5                        LOCAL
;  2369          2494  5                            PRIMARY: REF DBG$PRIMARY;
;  2370          2495  5
;  2371          2496  5                        ! First, get the value descriptor.
;  2372          2497  5                        ! Before we call PRIM_TO_VAL, however, we check
;  2373          2498  5                        ! whether the Primary represents an aggregate,
;  2374          2499  5                        ! such as an entire array. The scheme of saving
;  2375          2500  5                        ! away value descriptors does not work for aggregates,
;  2376          2501  5                        ! because we currently do not represent arrays
;  2377          2502  5                        ! and records with value descriptors. So, for now
;  2378          2503  5                        ! we signal an error saying that we do
;  2379          2504  5                        ! not currently support watchpointing of aggregates.
;  2380          2505  5                        !
;  2381          2506  5                        DBG$NCOPY_DESC(.EVENT_ENTRY[EVENT$L_PRIMARY],
;  2382          2507  5                            PRIMARY, DUMMY, FALSE);
;  2383          2508  5
;  2384          2509  5                        IF .PRIMARY[DBG$V_DHDR_AGGR]
;  2385          2510  5                        THEN
;  2386          2511  5                            SIGNAL(DBG$_NOWATAGGR);
;  2387          2512  5
;  2388          2513  5
;  2389          2514  5                        ! In order to keep the code path consistency
;  2390          2515  5                        ! it is better to turn the volatile value
;  2391          2516  5                        ! descriptor into value descriptor.
;  2392          2517  5                        !
;  2393          2518  5                        DBG$PRIM_TO_VAL (.PRIMARY,
;  2394          2519  5                                         DBG$K_V_VALUE_DESC,
;  2395          2520  5                                         VALUE);
;  2396          2521  5                        DBG$PRIM_TO_VAL (.VALUE,
;  2397          2522  5                                         DBG$K_VALUE_DESC,
;  2398          2523  5                                         VALUE
```

```
;  2399     2524  5                    );
;  2400     2525  5
;  2401     2526  5                IF .VALUE [DBG$B_DHDR_TYPE] NEQU DBG$K_VALUE_DESC
;  2402     2527  5                THEN
;  2403     2528  5                    SIGNAL(DBG$_WATCHSIZE)
;  2404     2529  5
;  2405     2530  5                ELSE
;  2406     2531  6                    BEGIN
;  2407     2532  6                    LOCAL
;  2408     2533  6                        PAGE_ENTRY :    REF EVENT$PAGE_DESCRIPTOR,
;  2409     2534  6                        PAGE_LIST :     REF VECTOR [, LONG],
;  2410     2535  6                        PAGE_FOUND;
;  2411     2536  6
;  2412     2537  6
;  2413     2538  6                    ! The user is not permitted to set a watchpoint in
;  2414     2539  6                    ! P1 space (or in system space)
;  2415     2540  6                    !
;  2416     2541  6                    IF .EVENT_ENTRY [EVENT$L_ADDRESS] GEQA P1_SPACE
;  2417     2542  6                    THEN
;  2418     2543  7                        BEGIN
;  2419     2544  7                        SIGNAL(DBG$_BADWATCH, 1,
;  2420     2545  7                               .EVENT_ENTRY[EVENT$L_ADDRESS]);
;  2421     2546  7                        RETURN STS$K_SEVERE;
;  2422     2547  6                        END;
;  2423     2548  6
;  2424     2549  6
;  2425     2550  6                    ! The user is not permitted to set a watchpoint on
;  2426     2551  6                    ! a variable bound to either the context registers
;  2427     2552  6                    ! or the user runframe registers.
;  2428     2553  6                    !
;  2429     2554  6                    IF DBG$MAP_TO_REG_ADDR
;  2430     2555  6                            (.EVENT_ENTRY [EVENT$L_ADDRESS], DUMMY)
;  2431     2556  6                    THEN
;  2432     2557  7                        BEGIN
;  2433     2558  7                        SIGNAL (DBG$_NOWATTAR);
;  2434     2559  7                        RETURN STS$K_SEVERE;
;  2435     2560  6                        END;
;  2436     2561  6
;  2437     2562  7                    IF (DBG$RUNFRAME [DBG$L_USER_REGS] LEQA
;  2438     2563  6                        .EVENT_ENTRY [EVENT$L_ADDRESS]) AND
;  2439     2564  7                       (.EVENT_ENTRY [EVENT$L_ADDRESS] LSSA
;  2440     2565  7                        DBG$RUNFRAME [DBG$L_USER_REGS] + 68)
;  2441     2566  6                    THEN
;  2442     2567  7                        BEGIN
;  2443     2568  7                        SIGNAL(DBG$_BADWATCH, 1,
;  2444     2569  7                               .EVENT_ENTRY[EVENT$L_ADDRESS]);
;  2445     2570  7                        RETURN STS$K_SEVERE;
;  2446     2571  6                        END;
;  2447     2572  6
;  2448     2573  6
;  2449     2574  6                    ! Save the value descriptor by making a copy of
;  2450     2575  6                    ! the value descriptor out of non-volatile storage.
;  2451     2576  6                    !
;  2452     2577  6                    ! Obtain the symid list, and lock it.
;  2453     2578  6                    !
;  2454     2579  6                    DBG$NGET_SYMID (.VALUE, SYMID_LIST, DUMMY);
;  2455     2580  6                    DBG$STA_LOCK_SYMID (.SYMID_LIST);
```

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;  2456          2581  6
;  2457          2582  6
;  2458          2583  6                ! Copy the value descriptor.
;  2459          2584  6                !
;  2460          2585  6                DBG$NCOPY_DESC (.VALUE,
;  2461          2586  6                                EVENT_ENTRY [EVENT$L_VALDESC],
;  2462          2587  6                                DUMMY);
;  2463          2588  6
;  2464          2589  6
;  2465          2590  6                ! Flag that this event has a value descriptor, and
;  2466          2591  6                ! point the event entry to it's value.
;  2467          2592  6                !
;  2468          2593  6                EVENT_ENTRY [EVENT$V_HAS_VAL_DSCR] = TRUE;
;  2469          2594  6
;  2470          2595  6
;  2471          2596  6                ! Get the pages associated with this value
;  2472          2597  6                !
;  2473          2598  6                IF NOT DBG$NGET_PAGES
;  2474          2599  6                        (.EVENT_ENTRY[EVENT$L_PRIMARY],
;  2475          2600  6                         PAGE_LIST, .MESSAGE_VECT)
;  2476          2601  6                THEN
;  2477          2602  7                    BEGIN
;  2478          2603  7                    SIGNAL(DBG$_BADWATCH, 1,
;  2479          2604  7                           .EVENT_ENTRY[EVENT$L_ADDRESS]);
;  2480          2605  7                    RETURN STS$K_SEVERE;
;  2481          2606  6                    END;
;  2482          2607  6
;  2483          2608  6
;  2484          2609  6                ! While there are entries in the page list, add a
;  2485          2610  6                ! new page reference in the page queue.
;  2486          2611  6                !
;  2487          2612  6                DO
;  2488          2613  7                    BEGIN
;  2489          2614  7
;  2490          2615  7
;  2491          2616  7                    ! Search through the existing entries in the
;  2492          2617  7                    ! page queue for this page.
;  2493          2618  7                    !
;  2494          2619  7                    PAGE_ENTRY = .EVENT$PAGE_QUEUE [L_QUEUE_FLINK];
;  2495          2620  7                    PAGE_FOUND = FALSE;
;  2496          2621  7                    WHILE .PAGE_ENTRY NEQA EVENT$PAGE_QUEUE DO
;  2497          2622  8                        BEGIN
;  2498          2623  8                        IF .PAGE_ENTRY [EVENT$L_PAGE_ADDRESS] EQLA
;  2499          2624  8                           .PAGE_LIST [1]
;  2500          2625  8                        THEN
;  2501          2626  8
;  2502          2627  8
;  2503          2628  8                            ! A match is found, so bump the refer-
;  2504          2629  8                            ! ence count, flag a find, and exit
;  2505          2630  8                            ! this loop.
;  2506          2631  8                            !
;  2507          2632  9                            BEGIN
;  2508          2633  9                            PAGE_ENTRY [EVENT$W_PAGE_REF_COUNT] =
;  2509          2634  9                                .PAGE_ENTRY [EVENT$W_PAGE_REF_COUNT] + 1;
;  2510          2635  9                            PAGE_FOUND = TRUE;
;  2511          2636  9                            EXITLOOP;
;  2512          2637  9                            END
```

```
;  2513          2638  9
;  2514          2639  9
;  2515          2640  9
;  2516          2641  9
;  2517          2642  8
;  2518          2643  8
;  2519          2644  8
;  2520          2645  7
;  2521          2646  7
;  2522          2647  7
;  2523          2648  7
;  2524          2649  7
;  2525          2650  7
;  2526          2651  7
;  2527          2652  7
;  2528          2653  8
;  2529          2654  8
;  2530          2655  8
;  2531          2656  8
;  2532          2657  8
;  2533          2658  8
;  2534          2659  8
;  2535        P 2660  8
;  2536        P 2661  8
;  2537        P 2662  8
;  2538          2663  9
;  2539          2664  8
;  2540          2665  9
;  2541          2666  9
;  2542          2667  9
;  2543          2668  8
;  2544        P 2669  8
;  2545        P 2670  8
;  2546          2671  9
;  2547          2672  8
;  2548          2673  9
;  2549          2674  9
;  2550          2675  9
;  2551          2676  8
;  2552          2677  8
;  2553          2678  8
;  2554          2679  8
;  2555          2680  8
;  2556          2681  8
;  2557          2682  7
;  2558          2683  7
;  2559          2684  7
;  2560          2685  6
;  2561          2686  5
;  2562          2687  4
;  2563          2688  4
;  2564          2689  4
;  2565          2690  4
;  2566          2691  4
;  2567          2692  4
;  2568          2693  4
;  2569          2694  4
```

```
    ! Not found yet, point to the next one.
    !
    ELSE
        PAGE_ENTRY = .PAGE_ENTRY [EVENT$L_PAGE_FLINK];

    END;


! If no match was found, add a new entry to the
! page queue, and fill it in.
!
IF NOT .PAGE_FOUND
THEN
    BEGIN
    LOCAL
        ADDRESS :   VECTOR [2],
        PROTECT;

    ADDRESS [0] = .PAGE_LIST [1];
    ADDRESS [1] = .PAGE_LIST [1];
    IF NOT $SETPRT (INADR   =   ADDRESS,
                    PROT    =   PRT$C_UR,
                    PRVPRT  =   PROTECT
                   )
    THEN
        BEGIN
        SIGNAL (DBG$_BADWATCH, 1, .PAGE_LIST [1]);
        RETURN STS$K_SEVERE;
        END;
    IF NOT $SETPRT (INADR   =   ADDRESS,
                    PROT    =   .PROTECT
                   )
    THEN
        BEGIN
        SIGNAL (DBG$_NOWPROT);
        RETURN STS$K_SEVERE;
        END;
    PAGE_ENTRY = DBG$GET_MEMORY (EVENT$K_PAGE_DESCRIPTOR_SIZE);
    INSQUE (.PAGE_ENTRY, EVENT$PAGE_QUEUE);
    PAGE_ENTRY [EVENT$L_PAGE_ADDRESS] =
        .PAGE_LIST [1];
    PAGE_ENTRY [EVENT$W_PAGE_REF_COUNT] = 1;
    END;
PAGE_LIST = .PAGE_LIST [0];
END
WHILE .PAGE_LIST;
END;
END;
TES;

! Point to the next noun node.
!
NOUN_NODE = .NOUN_NODE [DBG$L_NOUN_LINK];
```

```
;2570     2695  4
;2571     2696  4                    ! If there's more addresses, get an new event descriptor
;2572     2697  4                    ! from permanent memory, copy the current one to it, and
;2573     2698  4                    ! link it to the working queue; otherwise, exit this loop.
;2574     2699  4                    !
;2575     2700  4                    IF .NOUN_NODE NEQA 0
;2576     2701  4                    THEN
;2577     2702  5                        BEGIN
;2578     2703  5
;2579     2704  5
;2580     2705  5                        ! Get another event descriptor, and copy the old
;2581     2706  5                        ! one into it.
;2582     2707  5                        !
;2583     2708  5                        EVENT_ENTRY = DBG$GET_MEMORY
;2584     2709  5                                          (EVENT$K_EVENT_DESCRIPTOR_SIZE);
;2585     2710  5                        CH$MOVE
;2586     2711  5                            (EVENT$K_EVENT_DESCRIPTOR_SIZE * 4,
;2587     2712  5                             .EVENT_QUEUE [L_QUEUE_FLINK],
;2588     2713  5                             .EVENT_ENTRY
;2589     2714  5                            );
;2590     2715  5
;2591     2716  5
;2592     2717  5                        ! Link the new one into the working queue.
;2593     2718  5                        !
;2594     2719  5                        INSQUE (.EVENT_ENTRY, EVENT_QUEUE);
;2595     2720  5
;2596     2721  5
;2597     2722  5                        ! If the old entry has a WHEN, bump the WHEN's
;2598     2723  5                        ! reference count.
;2599     2724  5                        !
;2600     2725  5                        IF .EVENT_ENTRY [EVENT$L_WHEN] NEQA 0
;2601     2726  5                        THEN
;2602     2727  5                            WHEN_ENTRY [EVENT$L_WHEN_COUNT] =
;2603     2728  5                                .WHEN_ENTRY [EVENT$L_WHEN_COUNT] + 1;
;2604     2729  5
;2605     2730  5
;2606     2731  5                        ! If the old entry has a DO LIST, bump the DO LIST's
;2607     2732  5                        ! reference count.
;2608     2733  5                        !
;2609     2734  5                        IF .EVENT_ENTRY [EVENT$L_DO] NEQA 0
;2610     2735  5                        THEN
;2611     2736  5                            DO_ENTRY [EVENT$L_DO_LIST_COUNT] =
;2612     2737  5                                .DO_ENTRY [EVENT$L_DO_LIST_COUNT] + 1;
;2613     2738  5
;2614     2739  5                        END
;2615     2740  5
;2616     2741  4                    ELSE
;2617     2742  4                        EXITLOOP;
;2618     2743  4
;2619     2744  4                    END
;2620     2745  4
;2621     2746  2                END;
;2622     2747  2
;2623     2748  2
;2624     2749  2            ! Instruction events...
;2625     2750  2            !
;2626     2751  2            [EVENT$K_KIND_INS]:
```

```
;2627      2752  2          SELECTONE .EVENT_ENTRY [EVENT$B_SUB_KIND] OF
;2628      2753  2              SET
;2629      2754  2              [EVENT$K_INS_CALL]:
;2630      2755  2                  EVENT_ENTRY [EVENT$L_OPCODE_LIST] = DBG$OPCODES_CALL;
;2631      2756  2              [EVENT$K_INS_BRAN]:
;2632      2757  2                  EVENT_ENTRY [EVENT$L_OPCODE_LIST] = DBG$OPCODES_BRANC ;
;2633      2758  2              [EVENT$K_INS_EVRY]:
;2634      2759  2                  EVENT_ENTRY [EVENT$L_OPCODE_LIST] = 0;
;2635      2760  2              [EVENT$K_INS_USER]:
;2636      2761  3                  BEGIN
;2637      2762  3                  LOCAL
;2638      2763  3                      OPCODE_LIST: REF BITVECTOR[512];
;2639      2764  3
;2640      2765  3
;2641      2766  3                  ! Allocate space for the opcode list.
;2642      2767  3                  ! 512 bits = 16 longwords
;2643      2768  3                  !
;2644      2769  3                  OPCODE_LIST = DBG$GET_MEMORY(16);
;2645      2770  3
;2646      2771  3
;2647      2772  3                  ! If this is a STEP or SET STEP command without any /INST=(opcode...)
;2648      2773  3                  ! and we get here then the user must have previously
;2649      2774  3                  ! done SET STEP INST=(opcode-list). In this case we
;2650      2775  3                  ! initialize the OPCODE_LIST from the copy of
;2651      2776  3                  ! the opcode list that we saved away on the SET STEP command.
;2652      2777  3                  ! Otherwise, we just clear the opcode list.
;2653      2778  3                  !
;2654      2779  3                  IF (.NOUN_NODE EQLA 0) AND
;2655      2780  4                     ((.VERB_NODE[DBG$B_VERB_COMPOSITE] EQL EVENT$K_STEP) OR
;2656      2781  4                      (.VERB_NODE[DBG$B_VERB_COMPOSITE] EQL EVENT$K_SET_STEP))
;2657      2782  3                  THEN
;2658      2783  4                      BEGIN
;2659      2784  4                      CH$MOVE (64, DBG$OPCODES_STEP_USER, .OPCODE_LIST);
;2660      2785  4                      CH$MOVE (64, DBG$OPCODES_STEP_USER, DBG$OPCODES_USER);
;2661      2786  4                      END
;2662      2787  3                  ELSE
;2663      2788  4                      BEGIN
;2664      2789  4                      CH$FILL (0, 64, .OPCODE_LIST);
;2665      2790  4                      CH$FILL (0, 64, DBG$OPCODES_USER);
;2666      2791  3                      END;
;2667      2792  3
;2668      2793  3
;2669      2794  3                  ! For each opcode (found in the noun node(s) value,
;2670      2795  3                  ! set the corresponding opcode's bit in the User
;2671      2796  3                  ! opcode bitmap.
;2672      2797  3                  !
;2673      2798  3                  WHILE .NOUN_NODE NEQA 0 DO
;2674      2799  4                      BEGIN
;2675      2800  4                      OPCODE_LIST [.NOUN_NODE [DBG$L_NOUN_VALUE]] = 1;
;2676      2801  4                      DBG$OPCODES_USER [.NOUN_NODE [DBG$L_NOUN_VALUE]] = 1;
;2677      2802  4                      NOUN_NODE = .NOUN_NODE [DBG$L_NOUN_LINK]
;2678      2803  3                      END;
;2679      2804  3
;2680      2805  3
;2681      2806  3                  ! Now point the event entry to the user opcode bitmap.
;2682      2807  3                  !
;2683      2808  3                  EVENT_ENTRY [EVENT$L_OPCODE_LIST] = .OPCODE_LIST;
```

```
;  2684          2809  2                    END;
;  2685          2810  2
;  2686          2811  2
;  2687          2812  2                [EVENT$K_INS_LINE]:
;  2688          2813  2                    EVENT_ENTRY [EVENT$L_OPCODE_LIST] = 0;
;  2689          2814  2
;  2690          2815  2
;  2691          2816  2                ! An invalid sub-kind, yell !
;  2692          2817  2                !
;  2693          2818  2                [OTHERWISE]:
;  2694          2819  2                    $DBG_ERROR('DBGEVENT\EVENT_SEMANTICS 60');
;  2695          2820  2
;  2696          2821  2                TES;
;  2697          2822  2
;  2698          2823  2
;  2699          2824  2            ! /EXCEPTION kind - do nothing.
;  2700          2825  2            !
;  2701          2826  2            [EVENT$K_KIND_EXC]:
;  2702          2827  2                0;
;  2703          2828  2
;  2704          2829  2            ! An invalid kind, yell !
;  2705          2830  2            !
;  2706          2831  2            [OTHERWISE]:
;  2707          2832  2                $DBG_ERROR('DBGEVENT\EVENT_SEMANTICS 70');
;  2708          2833  2
;  2709          2834  2            TES;
;  2710          2835  2
;  2711          2836  2
;  2712          2837  2        ! If this is a STEP or SET STEP command, process the entry now.
;  2713          2838  2        !
;  2714          2839  2        IF .EVENT_ENTRY [EVENT$B_CMD_TYPE] EQLU EVENT$K_TYPE_STEPS
;  2715          2840  2        THEN
;  2716          2841  3            BEGIN
;  2717          2842  3
;  2718          2843  3
;  2719          2844  3            ! If this is a SET STEP command, just point to the user-defined STEP
;  2720          2845  3            ! definitions.
;  2721          2846  3            !
;  2722          2847  3            IF .VERB_NODE [DBG$B_VERB_COMPOSITE] EQLU EVENT$K_SET_STEP
;  2723          2848  3            THEN
;  2724          2849  3                DBG$SET_STP_LVL (USER_DEF_STEP)
;  2725          2850  3
;  2726          2851  3
;  2727          2852  3            ! This is a STEP command.
;  2728          2853  3            !
;  2729          2854  3            ELSE
;  2730          2855  4                BEGIN
;  2731          2856  4
;  2732          2857  4
;  2733          2858  4                ! This is a STEP command.  Make sure that we're not trying to
;  2734          2859  4                ! step from an exception.
;  2735          2860  4                !
;  2736          2861  4                IF .DBG$GB_EXC_BRE_FLAG
;  2737          2862  4                THEN
;  2738          2863  4                    SIGNAL(DBG$_STEFROEXC)
;  2739          2864  4
;  2740          2865  4
```

```
;  2741          2866  4          ! We are not stepping from an exception, so we can indeed step.'
;  2742          2867  4          !
;  2743          2868  4          ELSE
;  2744          2869  5              BEGIN
;  2745          2870  5
;  2746          2871  5
;  2747          2872  5              ! Make sure that we can start up where we are at.
;  2748          2873  5              !
;  2749          2874  5              IF NOT PROBER(%REF(0), %REF(1), .DBG$RUNFRAME[DBG$L_USER_PC])
;  2750          2875  5              THEN
;  2751          2876  5                  SIGNAL(DBG$_BADSTARTPC, 1, .DBG$RUNFRAME[DBG$L_USER_PC])
;  2752          2877  5
;  2753          2878  5
;  2754          2879  5              ! We can indeed start here, so this STEP is okay.
;  2755          2880  5              !
;  2756          2881  5              ELSE
;  2757          2882  6                  BEGIN
;  2758          2883  6
;  2759          2884  6
;  2760          2885  6                  ! Point to STEP override definitions.
;  2761          2886  6                  !
;  2762          2887  6                  DBG$SET_STP_LVL (OVERRIDE_STEP);
;  2763          2888  6
;  2764          2889  6
;  2765          2890  6                  ! Update the step count (probably not needed any more).
;  2766          2891  6                  !
;  2767          2892  6                  DBG$GL_STEP_NUM = .EVENT_ENTRY [EVENT$L_AFTER_COUNT];
;  2768          2893  6
;  2769          2894  6
;  2770          2895  6                  ! Is the user didn't type STEP 0 (a NOP), add this entry
;  2771          2896  6                  ! to the event queue.
;  2772          2897  6                  !
;  2773          2898  6                  IF .EVENT_ENTRY [EVENT$L_AFTER_COUNT] GTRU 0
;  2774          2899  6                  THEN
;  2775          2900  7                      BEGIN
;  2776          2901  7
;  2777          2902  7
;  2778          2903  7                      ! Remove this new entry from the working queue, and
;  2779          2904  7                      ! insert it into HEAD end of the Command Queue (we
;  2780          2905  7                      ! want steps to show up first).
;  2781          2906  7                      !
;  2782          2907  7                      REMQUE (.EVENT_ENTRY, EVENT_ENTRY);
;  2783          2908  7                      INSQUE (.EVENT_ENTRY, EVENT$CMD_QUEUE);
;  2784          2909  7
;  2785          2910  7
;  2786          2911  7                      ! Initialize the queue header within the entry (FLINK1
;  2787          2912  7                      ! and BLINK1) to be empty....
;  2788          2913  7                      !
;  2789          2914  7                      EVENT_ENTRY [EVENT$L_EXC_FLINK] = .EVENT_ENTRY;
;  2790          2915  7                      EVENT_ENTRY [EVENT$L_EXC_BLINK] = .EVENT_ENTRY;
;  2791          2916  7
;  2792          2917  7
;  2793          2918  7                      ! If this is a STEP/RETURN, save the current PC and
;  2794          2919  7                      ! set the saved FP to the current FP (unless we are
;  2795          2920  7                      ! looking at a RET instruction, in which case we're
;  2796          2921  7                      ! going to STEP out one routine level).
;  2797          2922  7                      !
```

```
;2798     2923  7                IF .EVENT_ENTRY [EVENT$B_SUB_KIND] EQLU
;2799     2924  7                   EVENT$K_ACC_RTRN
;2800     2925  7                THEN
;2801     2926  8                    BEGIN
;2802     2927  8                    BUILTIN PROBER;
;2803     2928  8                    LOCAL
;2804     2929  8                        CALL_FRAME      : REF VECTOR[,LONG],
;2805     2930  8                        STACK_FRAME     : REF BLOCK [,BYTE],
;2806     2931  8                        INSTRUCTION     : BYTE;
;2807     2932  8
;2808     2933  8                    EVENT_ENTRY [EVENT$L_USERS_PC] = .DBG$RUNFRAME [DBG$L_USER_PC];
;2809     2934  8                    EVENT_ENTRY [EVENT$L_USERS_FP] = .DBG$RUNFRAME [DBG$L_USER_FP];
;2810     2935  8                    IF PROBER(%REF(0),%REF(1),.DBG$RUNFRAME[DBG$L_USER_PC])
;2811     2936  8                    THEN
;2812     2937  9                        BEGIN
;2813     2938  9                        INSTRUCTION = .(.DBG$RUNFRAME[DBG$L_USER_PC])<0,8,0>;
;2814     2939 10                        IF (.INSTRUCTION EQLU %X'04')
;2815     2940  9                        THEN
;2816     2941 10                            BEGIN
;2817     2942 10                            STACK_FRAME = .DBG$RUNFRAME[DBG$L_USER_FP];
;2818     2943 10                            IF PROBER(%REF(0), %REF(20), .STACK_FRAME)
;2819     2944 10                            THEN
;2820     2945 10                                EVENT_ENTRY[EVENT$L_USERS_FP] =
;2821     2946 10                                        .STACK_FRAME[SF$L_SAVE_FP];
;2822     2947  9                            END;
;2823     2948  8                        END;
;2824     2949  8
;2825     2950  8                    ! Save more info from FP. in the Event.
;2826     2951  8                    !
;2827     2952  8                    CALL_FRAME = DBG$GET_MEMORY(5);
;2828     2953  8                    EVENT_ENTRY[EVENT$L_CALL_FRAME] = .CALL_FRAME;
;2829     2954  8                    CH$MOVE(20,.EVENT_ENTRY[EVENT$L_USERS_FP],.CALL_FRAME);
;2830     2955  7                    END;
;2831     2956  7
;2832     2957  7
;2833     2958  7                    ! This was a STEP command - stop taking commands.
;2834     2959  7                    !
;2835     2960  7                    DBG$GB_TAKE_CMD = FALSE;
;2836     2961  6                    END;
;2837     2962  6
;2838     2963  5                END;
;2839     2964  5
;2840     2965  4                END;
;2841     2966  4
;2842     2967  3            END;
;2843     2968  3
;2844     2969  3
;2845     2970  3        ! Setup the stepping flags.
;2846     2971  3        !
;2847     2972  3        DBG$GB_STP_PTR [EVENT$B_STEPPING_KIND] =
;2848     2973  3            .EVENT_ENTRY [EVENT$B_SUB_KIND];
;2849     2974  3        DBG$GB_STP_PTR [EVENT$V_STEPPING_LINE] =
;2850     2975  3            .EVENT_ENTRY [EVENT$V_STEP_LINE];
;2851     2976  3        DBG$GB_STP_PTR [EVENT$V_STEPPING_OVER] =
;2852     2977  3            .EVENT_ENTRY [EVENT$V_STEP_OVER];
;2853     2978  3        DBG$GB_STP_PTR [EVENT$V_STEPPING_SOURCE] =
;2854     2979  3            .EVENT_ENTRY [EVENT$V_STEP_SOURCE];
```

```
;  2855          2980  3          DBG$GB_STP_PTR [EVENT$V_STEPPING_NOSYSTEM] =
;  2856          2981  3              .EVENT_ENTRY [EVENT$V_STEP_NOSYSTEM];
;  2857          2982  3          DBG$GB_STP_PTR [EVENT$V_STEPPING_NOSILENT] =
;  2858          2983  3              .EVENT_ENTRY [EVENT$V_STEP_NOSILENT];
;  2859          2984  3
;  2860          2985  3
;  2861          2986  3          ! Save away the opcode list we have built. We get here on
;  2862          2987  3          ! SET STEP INST= (opcode-list)
;  2863          2988  3          !
;  2864          2989  3          IF .VERB_NODE[DBG$B_VERB_COMPOSITE] EQL EVENT$ _SET_STEP
;  2865          2990  3          THEN
;  2866          2991  4              BEGIN
;  2867          2992  4              IF .EVENT_ENTRY[EVENT$B_SUB_KIND] EQL EVENT$K_INS_USER
;  2868          2993  4              THEN
;  2869          2994  5                  BEGIN
;  2870          2995  5                  CH$MOVE(64, DBG$OPCODES_USER, DBG$OPCODE _STEP_USER);
;  2871          2996  5                  DBG$GB_STP_PTR [EVENT$L_STEPPING_OP_LIST] = DBG$OPCODES_STEP_USER;
;  2872          2997  5                  END
;  2873          2998  5
;  2874          2999  4              ELSE
;  2875          3000  4                  DBG$GB_STP_PTR [EVENT$L_STEPPING_OP_LIST] = 0;
;  2876          3001  3              END;
;  2877          3002  3          END
;  2878          3003  3
;  2879          3004  3
;  2880          3005  3      ! This is not a STEP or SET STEP command, so it must be SET BREAK, SET
;  2881          3006  3      ! TRACE, or SET WATCH.
;  2882          3007  3      !
;  2883          3008  2      ELSE
;  2884          3009  3          BEGIN
;  2885          3010  3
;  2886          3011  3
;  2887          3012  3          ! Now that we've built a working list of event entries, add them to
;  2888          3013  3          ! the Command Queue, deleting existing entries that match new ones.
;  2889          3014  3          !
;  2890          3015  3          ! For each new event entry, check the existing entries in the
;  2891          3016  3          ! Command queue for any entries that match (command types, and
;  2892          3017  3          ! addresses if the command type is an access type).
;  2893          3018  3          !
;  2894          3019  3          ! So, while there are (still) entries on the working queue....
;  2895          3020  3          !
;  2896          3021  3          WHILE .EVENT_QUEUE [L_QUEUE_FLINK] NEQA EVENT_QUEUE DO
;  2897          3022  4              BEGIN
;  2898          3023  4
;  2899          3024  4
;  2900          3025  4              ! Point EVENT_ENTRY to the first new event entry on the
;  2901          3026  4              ! working queue.
;  2902          3027  4              !
;  2903          3028  4              EVENT_ENTRY = .EVENT_QUEUE [L_QUEUE_FLINK];
;  2904          3029  4
;  2905          3030  4
;  2906          3031  4              ! Point to the first and next existing entries in the Command Queue.
;  2907          3032  4              !
;  2908          3033  4              QUEUE_ENTRY = .EVENT$CMD_QUEUE [L_QUEUE_FLINK];
;  2909          3034  4              NEXTQ_ENTRY = .QUEUE_ENTRY [EVENT$L_CMD_FLINK];
;  2910          3035  4
;  2911          3036  4
```

```
;  2912          3037  4          ! For each existing entry...
;  2913          3038  4          !
;  2914          3039  4          WHILE .QUEUE_ENTRY NEQA EVENT$CMD_QUEUE DO
;  2915          3040  5              BEGIN
;  2916          3041  5
;  2917          3042  5
;  2918          3043  5              ! Ignore any 'deleted' entries that haven't actually been
;  2919          3044  5              ! removed.
;  2920          3045  5              !
;  2921          3046  5              IF NOT .QUEUE_ENTRY [EVENT$V_DELETED]
;  2922          3047  5              THEN
;  2923          3048  6                  BEGIN
;  2924          3049  6
;  2925          3050  6
;  2926          3051  6                  ! Compare the command kind of this existing entry and the
;  2927          3052  6                  ! new one.
;  2928          3053  6                  !
;  2929          3054  6                  IF .EVENT_ENTRY [EVENT$B_CMD_KIND] EQLU
;  2930          3055  6                     .QUEUE_ENTRY [EVENT$B_CMD_KIND]
;  2931          3056  6                  THEN
;  2932          3057  7                      BEGIN
;  2933          3058  7
;  2934          3059  7
;  2935          3060  7                      ! The command kinds match.  Select on the kind.
;  2936          3061  7                      !
;  2937          3062  7                      SELECTONE .EVENT_ENTRY [EVENT$B_CMD_KIND] OF
;  2938          3063  7                          SET
;  2939          3064  7
;  2940          3065  7
;  2941          3066  7                      ! The command kind is access (/READ, /WRITE,
;  2942          3067  7                      ! /MODIFY, /EXECUTE, or /RETURN).  We now have to
;  2943          3068  7                      ! compare the entries to determine if the existing
;  2944          3069  7                      ! one must be deleted.
;  2945          3070  7                      !
;  2946          3071  7                      [EVENT$K_KIND_ACC]:
;  2947          3072  8                          BEGIN
;  2948          3073  8                          LOCAL CODE_1,CODE_2;
;  2949          3074  8
;  2950          3075  8                          !   If either of the entries is /EXECUTE or
;  2951          3076  8                          ! /RETURN, we'll compare the byte addresses,
;  2952          3077  8                          ! otherwise compare the two VMS descriptors,
;  2953          3078  8                          ! and delete the exisiting entry if they're
;  2954          3079  8                          ! the same.
;  2955          3080  8                          !
;  2956          3081  8                          CODE_1 = .EVENT_ENTRY [EVENT$B_SUB_KIND];
;  2957          3082  8                          CODE_2 = .QUEUE_ENTRY [EVENT$B_SUB_KIND];
;  2958          3083 10                          IF (IF (.CODE_1 EQLU EVENT$K_ACC_EXEC)
;  2959          3084 10                              OR (.CODE_1 EQLU EVENT$K_ACC_RTRN)
;  2960          3085 10                              OR (.CODE_2 EQLU EVENT$K_ACC_EXEC)
;  2961          3086 10                              OR (.CODE_2 EQLU EVENT$K_ACC_RTRN)
;  2962          3087  9                              THEN
;  2963          3088  9                                  .EVENT_ENTRY [EVENT$L_ADDRESS] EQLA
;  2964          3089  9                                  .QUEUE_ENTRY [EVENT$L_ADDRESS]
;  2965          3090  9                              ELSE
;  2966          3091  9                                  COMPARE_VMSDESC(EVENT_ENTRY [EVENT$A_VMSDESC],
;  2967          3092  9                                                  QUEUE_ENTRY [EVENT$A_VMSDESC])
;  2968          3093  9                              )
```

```
;  2969          3094  8                    THEN
;  2970          3095  8                        QUEUE_ENTRY [EVENT$V_DELETED] = TRUE;
;  2971          3096  7                    END;
;  2972          3097  7
;  2973          3098  7                ! The command kind is instruction.  Compare the two
;  2974          3099  7                ! entries' subkind, and delete the existing entry
;  2975          3100  7                ! if they're the same.
;  2976          3101  7                !
;  2977          3102  7                [EVENT$K_KIND_INS]:
;  2978          3103  7                    CASE .EVENT_ENTRY [EVENT$B_SUB_KIND]
;  2979          3104  7                    FROM EVENT$K_INS_CALL TO EVENT$K_INS_USER OF
;  2980          3105  7                        SET
;  2981          3106  7                        [EVENT$K_INS_CALL TO EVENT$K_INS_LINE]:
;  2982          3107  7                            IF .EVENT_ENTRY [EVENT$B_SUB_KIND] EQLU
;  2983          3108  7                               .QUEUE_ENTRY [EVENT$B_SUB_KIND]
;  2984          3109  7                            THEN
;  2985          3110  7                                QUEUE_ENTRY [EVENT$V_DELETED] =
;  2986          3111  7                                    TRUE;
;  2987          3112  7                        [EVENT$K_INS_EVRY TO EVENT$K_INS_USER]:
;  2988          3113  7                            IF (.QUEUE_ENTRY [EVENT$B_SUB_KIND] EQLU
;  2989          3114  8                                EVENT$K_INS_EVRY) OR
;  2990          3115  7                               (.QUEUE_ENTRY [EVENT$B_SUB_KIND] EQLU
;  2991          3116  8                                EVENT$K_INS_USER)
;  2992          3117  8                            THEN
;  2993          3118  7                                QUEUE_ENTRY [EVENT$V_DELETED] =
;  2994          3119  7                                    TRUE;
;  2995          3120  7                        TES;
;  2996          3121  7
;  2997          3122  7
;  2998          3123  7                    ! The access type is exception, so delete the
;  2999          3124  7                    ! existing entry.
;  3000          3125  7                    !
;  3001          3126  7                    [EVENT$K_KIND_EXC]:
;  3002          3127  7                        QUEUE_ENTRY [EVENT$V_DELETED] = TRUE;
;  3003          3128  7
;  3004          3129  7
;  3005          3130  7                    ! The command kind is invalid - yell !
;  3006          3131  7                    !
;  3007          3132  7                    [OTHERWISE]:
;  3008          3133  7                        $DBG_ERROR('DBGEVENT\EVENT_SEMANTICS 80');
;  3009          3134  7
;  3010          3135  7                    TES;
;  3011          3136  7
;  3012          3137  7                END;
;  3013          3138  6
;  3014          3139  6            END;
;  3015          3140  5
;  3016          3141  5
;  3017          3142  5            ! Point to the next Command Queue entries.
;  3018          3143  5            !
;  3019          3144  5            QUEUE_ENTRY = .NEXTQ_ENTRY;
;  3020          3145  5            NEXTQ_ENTRY = .QUEUE_ENTRY [EVENT$L_CMD_FLINK];
;  3021          3146  5            END;
;  3022          3147  4
;  3023          3148  4
;  3024          3149  4        ! Remove this new entry from the working queue, and insert
;  3025          3150  4
```

```
;3026          3151  4              ! it into tail end of the Command Queue.
;3027          3152  4              !
;3028          3153  4              REMQUE (.EVENT_ENTRY, EVENT_ENTRY);
;3029          3154  4              INSQUE (.EVENT_ENTRY, .EVENT$CMD_QUEUE [L_QUEUE_BLINK]);
;3030          3155  4
;3031          3156  4
;3032          3157  4              ! Initialize the queue header within the entry (FLINK1 and BLINK1)
;3033          3158  4              ! to be empty.
;3034          3159  4              !
;3035          3160  4              EVENT_ENTRY [EVENT$L_EXC_FLINK] = .EVENT_ENTRY;
;3036          3161  4              EVENT_ENTRY [EVENT$L_EXC_BLINK] = .EVENT_ENTRY;
;3037          3162  3              END;
;3038          3163  3
;3039          3164  2          END;
;3040          3165  2
;3041          3166  2
;3042          3167  2      ! Delete any entries that remain in the working queue.
;3043          3168  2      ! This happens on SET STEP or on STEP 0.
;3044          3169  2      !
;3045          3170  2      EVENT_ENTRY = .EVENT_QUEUE[L_QUEUE_FLINK];
;3046          3171  2      WHILE .EVENT_ENTRY NEQU EVENT_QUEUE DO
;3047          3172  3          BEGIN
;3048          3173  3          LOCAL
;3049          3174  3              NEW_EVENT_ENTRY;
;3050          3175  3          NEW_EVENT_ENTRY = .EVENT_ENTRY[EVENT$L_CMD_FLINK];
;3051          3176  3          DELETE_EVENT_ENTRY(.EVENT_ENTRY);
;3052          3177  3          EVENT_ENTRY = .NEW_EVENT_ENTRY;
;3053          3178  2          END;
;3054          3179  2
;3055          3180  2
;3056          3181  2      ! All's well that ends well.
;3057          3182  2      !
;3058          3183  2      RETURN STS$K_SUCCESS;
;3059          3184  2
;3060          3185  1      END;


                                                                .PSECT  DBG$PLIT,NOWRT,  SHR,  PIC,0

54  4E  45  56  45  5C  54  4E  45  56  45  47  42  44  1B  000C1 P.ABL:   .ASCII  <27>\DBGEVENT\<92>\EVENT_SEMANTICS 10\      ;
    30  31  20  53  43  49  54  4E  41  4D  45  53  5F  000D0                                                                    ;
54  4E  45  56  45  5C  54  4E  45  56  45  47  42  44  1B  000DD P.ABM:   .ASCII  <27>\DBGEVENT\<92>\EVENT_SEMANTICS 20\      ;
    30  32  20  53  43  49  54  4E  41  4D  45  53  5F  000EC                                                                    ;
54  4E  45  56  45  5C  54  4E  45  56  45  47  42  44  1B  000F9 P.ABN:   .ASCII  <27>\DBGEVENT\<92>\EVENT_SEMANTICS 30\      ;
    30  33  20  53  43  49  54  4E  41  4D  45  53  5F  00108                                                                    ;
54  4E  45  56  45  5C  54  4E  45  56  45  47  42  44  1B  00115 P.ABO:   .ASCII  <27>\DBGEVENT\<92>\EVENT_SEMANTICS 40\      ;
    30  34  20  53  43  49  54  4E  41  4D  45  53  5F  00124                                                                    ;
54  4E  45  56  45  5C  54  4E  45  56  45  47  42  44  1B  00131 P.ABP:   .ASCII  <27>\DBGEVENT\<92>\EVENT_SEMANTICS 50\      ;
    30  35  20  53  43  49  54  4E  41  4D  45  53  5F  00140                                                                    ;
54  4E  45  56  45  5C  54  4E  45  56  45  47  42  44  1B  0014D P.ABQ:   .ASCII  <27>\DBGEVENT\<92>\EVENT_SEMANTICS 60\      ;
    30  36  20  53  43  49  54  4E  41  4D  45  53  5F  0015C                                                                    ;
54  4E  45  56  45  5C  54  4E  45  56  45  47  42  44  1B  00169 P.ABR:   .ASCII  <27>\DBGEVENT\<92>\EVENT_SEMANTICS 70\      ;
    30  37  20  53  43  49  54  4E  41  4D  45  53  5F  00178                                                                    ;
54  4E  45  56  45  5C  54  4E  45  56  45  47  42  44  1B  00185 P.ABS:   .ASCII  <27>\DBGEVENT\<92>\EVENT_SEMANTICS 80\      ;
    30  38  20  53  43  49  54  4E  41  4D  45  53  5F  00194                                                                    ;
```

```
                                        .EXTRN  SYS$SETPRT

                                        .PSECT  DBG$CODE,NOWRT,  SHR,  PIC,0

                                 0FFC 00000     .ENTRY  DBG$EVENT_SEMANTICS, Save R2,R3,R4,R5,R6,-      ; 1840
                                                        R7,R8,R9,R10,R11
                5E      B4   AE  9E 00002       MOVAB   -76(SP), SP
             3C AE      3C   AE  9E 00006       MOVAB   EVENT_QUEUE, EVENT_QUEUE                        ; 1894
             40 AE      3C   AE  9E 0000B       MOVAB   EVENT_QUEUE, EVENT_QUEUE+4                      ; 1895
                               10  DD 00010      PUSHL   #16                                             ; 1902
00000000G    00               01  FB 00012      CALLS   #1, DBG$GET_MEMORY
                56             50  D0 00019      MOVL    R0, EVENT_ENTRY
             3C AE              66  0E 0001C      INSQUE  (EVENT_ENTRY), EVENT_QUEUE                      ; 1903
             08 A6              56  D0 00020      MOVL    EVENT_ENTRY, 8(EVENT_ENTRY)                     ; 1904
             0C A6              56  D0 00024      MOVL    EVENT_ENTRY, 12(EVENT_ENTRY)                    ; 1905
                52      04   AC  D0 00028       MOVL    VERB_NODE, R2                                   ; 1910
                50      01   A2  9A 0002C       MOVZBL  1(R2), R0
                01             50  91 00030      CMPB    R0, #1                                          ; 1913
                               05  12 00033      BNEQ    1$
                    14   A6    94 00035        CLRB    20(EVENT_ENTRY)                                 ; 1914
                               4C  11 00038      BRB     6$
                03             50  91 0003A 1$:  CMPB    R0, #3                                          ; 1916
                               08  12 0003D      BNEQ    2$
             14 A6      0200   8F  B0 0003F      MOVW    #512, 20(EVENT_ENTRY)                           ; 1918
                               3F  11 00045      BRB     6$                                              ; 1910
                0E             50  91 00047 2$:  CMPB    R0, #14                                         ; 1922
                               06  12 0004A      BNEQ    3$
             14 A6              01  90 0004C      MOVB    #1, 20(EVENT_ENTRY)                             ; 1923
                               34  11 00050      BRB     6$
                11             50  91 00052 3$:  CMPB    R0, #17                                         ; 1925
                               0A  12 00055      BNEQ    4$
                14   A6        02  B0 00057      MOVW    #2, 20(EVENT_ENTRY)                             ; 1927
                16   A6        02  90 0005B      MOVB    #2, 22(EVENT_ENTRY)                             ; 1929
                               25  11 0005F      BRB     6$
                0B             50  91 00061 4$:  CMPB    R0, #11                                         ; 1932
                               0B  1F 00064      BLSSU   5$
                0C             50  91 00066      CMPB    R0, #12
                               06  1A 00069      BGTRU   5$
             14 A6              03  90 0006B      MOVB    #3, 20(EVENT_ENTRY)                             ; 1934
                               15  11 0006F      BRB     6$
                    00000000'  EF  9F 00071 5$:  PUSHAB  P.ABL                                           ; 1937
                               01  DD 00077      PUSHL   #1
                00028362       8F  DD 00079      PUSHL   #164706
      00000000G    00               03  FB 0007F      CALLS   #3, LIB$SIGNAL
                    17   A6    94 00086 6$:  CLRB    23(EVENT_ENTRY)                                 ; 1945
                50          18   A6  9E 00089      MOVAB   24(EVENT_ENTRY), R0                         ; 1951
                               60  D4 0008D      CLRL    (R0)
                03             14   A6  91 0008F      CMPB    20(EVENT_ENTRY), #3                     ; 1952
                               3A  12 00093      BNEQ    7$
                51 00000000G   00  D0 00095      MOVL    DBG$GB_STP_PTR, R1                              ; 1955
60 01                          01      01  A1  F0 0009C      INSV    1(R1), #1, #1, (R0)
53 61                          01          09  EF 000A2      EXTZV   #9, #1, (R1), R3                    ; 1956
60 01                          03          53  F0 000A7      INSV    R3, #3, #1, (R0)
53 61                          01          0A  EF 000AC      EXTZV   #10, #1, (R1), R3                   ; 1958
60 01                          05          53  F0 000B1      INSV    R3, #5, #1, (R0)
                               60          10  8A 000B6      BICB2   #16, (R0)                           ; 1959
53 61                          01          0B  EF 000B9      EXTZV   #11, #1, (R1), R3                   ; 1961
```

```
                60      01              07              53  F0 000BE          INSV    R3, #7, #1, (R0)                        ;
                53      61              01              0C  EF 000C3          EXTZV   #12, #1, (R1), R3                       ; 1963
                60      01              09              53  F0 000C8          INSV    R3, #9, #1, (R0)                        ;
                                                        05  11 000CD          BRB     8$                                      ; 1952
                                                    60  02BA  8F  AA 000CF 7$:       BICW2   #698, (R0)                      ; 1977
                                                1C  A6      01  7D 000D4 8$:       MOVQ    #1, 28(EVENT_ENTRY)             ; 1988
                                                    24  A6  7C 000D8              CLRQ    36(EVENT_ENTRY)                 ; 1994
                                                    5A  08  A2 DO 000DB           MOVL    8(R2), NOUN_NODE                ; 1999
                                                    52  04  A2 DO 000DF           MOVL    4(R2), ADVERB_NODE              ; 2004
                                                        03  12 000E3 9$:        BNEQ    10$                             ; 2009
                                                    0213  31 000E5              BRW     51$                             ;
                                                        62  95 000E8 10$:       TSTB    (ADVERB_NODE)                   ; 2022
                                                        07  12 000EA           BNEQ    11$                             ;
                                                1C  A6      04  A2 DO 000EC     MOVL    4(ADVERB_NODE), 28(EVENT_ENTRY) ; 2024
                                                        5D  11 000F1           BRB     16$                             ; 2023
                                                    01      62  91 000F3 11$:       CMPB    (ADVERB_NODE), #1               ; 2029
                                                        06  12 000F6           BNEQ    12$                             ;
                                                17  A6      04  88 000F8       BISB2   #4, 23(EVENT_ENTRY)             ; 2030
                                                        52  11 000FC           BRB     16$                             ;
                                                    02      62  91 000FE 12$:       CMPB    (ADVERB_NODE), #2               ; 2035
                                                        0A  12 00101           BNEQ    13$                             ;
                                                17  A6      01  88 00103       BISB2   #1, 23(EVENT_ENTRY)             ; 2037
                                                19  A6      02  8A 00107       BICB2   #2, 25(EVENT_ENTRY)             ; 2038
                                                        0D  11 0010B           BRB     14$                             ; 2039
                                                    03      62  91 0010D 13$:       CMPB    (ADVERB_NODE), #3               ; 2045
                                                        0E  12 00110           BNEQ    15$                             ;
                                                17  A6      01  8A 00112       BICB2   #1, 23(EVENT_ENTRY)             ; 2047
                                                19  A6      02  88 00116       BISB2   #2, 25(EVENT_ENTRY)             ; 2048
                                                19  A6      01  88 0011A 14$:       BISB2   #1, 25(EVENT_ENTRY)             ; 2049
                                                        62  11 0011E           BRB     18$                             ; 2016
                                                    04      62  91 00120 15$:       CMPB    (ADVERB_NODE), #4               ; 2055
                                                        2D  12 00123           BNEQ    17$                             ;
                                                        04  DD 00125           PUSHL   #4                              ; 2063
                                        00000000G       00  01  FB 00127       CALLS   #1, DBG$GET_MEMORY              ;
                                                        58  50  DO 0012E       MOVL    R0, WHEN_ENTRY                  ;
                                        00000000'       EF  68  0E 00131       INSQUE  (WHEN_ENTRY), EVENT$WHEN_QUEUE  ; 2064
                                                20      A6  58  DO 00138       MOVL    WHEN_ENTRY, 32(EVENT_ENTRY)     ; 2069
                                                        53  04  A2 DO 0013C     MOVL    4(ADVERB_NODE), STRING          ; 2074
                                                        50  63  3C 00140       MOVZWL  (STRING), LENGTH                ; 2075
                                                    01  A043  0D  90 00143       MOVB    #13, 1(LENGTH)[STRING]          ; 2076
                                                    08      A8  01  DO 00148       MOVL    #1, 8(WHEN_ENTRY)               ; 2081
                                                    0C      A8  53  DO 0014C       MOVL    STRING, 12(WHEN_ENTRY)          ; 2082
                                                        30  11 00150 16$:       BRB     18$                             ; 2016
                                                    05      62  91 00152 17$:       CMPB    (ADVERB_NODE), #5               ; 2088
                                                        2D  12 00155           BNEQ    19$                             ;
                                                        04  DD 00157           PUSHL   #4                              ; 2097
                                        00000000G       00  01  FB 00159       CALLS   #1, DBG$GET_MEMORY              ;
                                                        59  50  DO 00160       MOVL    R0, DO_ENTRY                    ;
                                        00000000'       EF  69  0E 00163       INSQUE  (DO_ENTRY), EVENT$DO_LIST_QUEUE ; 2098
                                                24      A6  59  DO 0016A       MOVL    DO_ENTRY, 36(EVENT_ENTRY)       ; 2103
                                                        53  04  A2 DO 0016E     MOVL    4(ADVERB_NODE), STRING          ; 2108
                                                        50  63  3C 00172       MOVZWL  (STRING), LENGTH                ; 2109
                                                    01  A043  0D  90 00175       MOVB    #13, 1(LENGTH)[STRING]          ; 2110
                                                    08      A9  01  DO 0017A       MOVL    #1, 8(DO_ENTRY)                 ; 2115
                                                    0C      A9  53  DO 0017E       MOVL    STRING, 12(DO_ENTRY)            ; 2116
                                                        64  11 00182 18$:       BRB     27$                             ; 2016
                                                    06      62  91 00184 19$:       CMPB    (ADVERB_NODE), #6               ; 2123
```

```
                                54  1F 00187          BLSSU   26$                                                    ;
                             0A 62  91 00189          CMPB    (ADVERB_NODE), #10                                     ;
                                4F  1A 0018C          BGTRU   26$                                                    ;
                          15    A6  94 0018E          CLRB    21(EVENT_ENTRY)                                        ; 2130
                             06 62  91 00191          CMPB    (ADVERB_NODE), #6                                      ; 2138
                                04  12 00194          BNEQ    20$                                                    ;
                                50  D4 00196          CLRL    R0                                                     ;
                                3D  11 00198          BRB     25$                                                    ;
                             07 62  91 0019A 20$:     CMPB    (ADVERB_NODE), #7                                      ; 2140
                                05  12 0019D          BNEQ    21$                                                    ;
                             50 01  D0 0019F          MOVL    #1, R0                                                 ;
                                33  11 001A2          BRB     25$                                                    ;
                             08 62  91 001A4 21$:     CMPB    (ADVERB_NODE), #8                                      ; 2142
                                05  12 001A7          BNEQ    22$                                                    ;
                             50 02  D0 001A9          MOVL    #2, R0                                                 ;
                                29  11 001AC          BRB     25$                                                    ;
                             09 62  91 001AE 22$:     CMPB    (ADVERB_NODE), #9                                      ; 2144
                                05  12 001B1          BNEQ    23$                                                    ;
                             50 03  D0 001B3          MOVL    #3, R0                                                 ;
                                1F  11 001B6          BRB     25$                                                    ;
                             0A 62  91 001B8 23$:     CMPB    (ADVERB_NODE), #10                                     ; 2146
                                05  12 001BB          BNEQ    24$                                                    ;
                             50 04  D0 001BD          MOVL    #4, R0                                                 ;
                                15  11 001C0          BRB     25$                                                    ;
                   00000000'    EF  9F 001C2 24$:     PUSHAB  P.ABM                                                  ; 2149
                                01  DD 001C8          PUSHL   #1                                                     ;
                   00028362     8F  DD 001CA          PUSHL   #164706                                                ;
                00000000G   00  03  FB 001D0          CALLS   #3, LIB$SIGNAL                                         ;
                      16    A6  50  90 001D7 25$:     MOVB    R0, 22(EVENT_ENTRY)                                    ; 2136
                                0B  11 001DB          BRB     27$                                                    ; 2016
                             0B 62  91 001DD 26$:     CMPB    (ADVERB_NODE), #11                                     ; 2157
                                09  12 001E0          BNEQ    28$                                                    ;
                      15    A6  0F02 8F  B0 001E2     MOVW    #3842, 21(EVENT_ENTRY)                                 ; 2159
                                0109 31  001E8 27$:   BRW     50$                                                    ; 2016
                             0A 62  91 001EB 28$:     CMPB    (ADVERB_NODE), #10                                     ; 2167
                                0D  13 001EE          BEQL    31$                                                    ;
                             12 62  91 001F0          CMPB    (ADVERB_NODE), #18                                     ;
                                03  1E 001F3          BGEQU   30$                                                    ;
                                0096 31  001F5 29$:   BRW     40$                                                    ;
                             16 62  91 001F8 30$:     CMPB    (ADVERB_NODE), #22                                     ;
                                F8  1A 001FB          BGTRU   29$                                                    ;
                      15    A6  01  90 001FD 31$:     MOVB    #1, 21(EVENT_ENTRY)                                    ; 2182
                             12 62  91 00201          CMPB    (ADVERB_NODE), #18                                     ; 2190
                                05  12 00204          BNEQ    32$                                                    ;
                             50 05  D0 00206          MOVL    #5, R0                                                 ;
                                3D  11 00209          BRB     37$                                                    ;
                             13 62  91 0020B 32$:     CMPB    (ADVERB_NODE), #19                                     ; 2192
                                05  12 0020E          BNEQ    33$                                                    ;
                             50 06  D0 00210          MOVL    #6, R0                                                 ;
                                33  11 00213          BRB     37$                                                    ;
                             14 62  91 00215 33$:     CMPB    (ADVERB_NODE), #20                                     ; 2194
                                05  12 00218          BNEQ    34$                                                    ;
                             50 07  D0 0021A          MOVL    #7, R0                                                 ;
                                29  11 0021D          BRB     37$                                                    ;
                             16 62  91 0021F 34$:     CMPB    (ADVERB_NODE), #22                                     ; 2196
                                05  12 00222          BNEQ    35$                                                    ;
                             50 09  D0 00224          MOVL    #9, R0                                                 ;
```

```
                                                 1F  11 00227          BRB     37$                                             ;
                                          15     62  91 00229 35$:     CMPB    (ADVERB_NODE), #21                              ; 2198
                                                 05  12 0022C          BNEQ    36$                                             ;
                                          50     08  D0 0022E          MOVL    #8, R0                                          ;
                                                 15  11 00231          BRB     37$                                             ;
                                00000000'        EF  9F 00233 36$:     PUSHAB  P.ABN                                           ; 2201
                                                 01  DD 00239          PUSHL   #1                                              ;
                                00028362         8F  DD 0023B          PUSHL   #164706                                         ;
                        00000000G  00            03  FB 00241          CALLS   #3, LIB$SIGNAL                                  ;
                              16   A6            50  90 00248 37$:     MOVB    R0, 22(EVENT_ENTRY)                             ; 2188
                                                 50  D4 0024C          CLRL    R0                                              ; 2209
                                          07     16  A6 91 0024E          CMPB    22(EVENT_ENTRY), #7                             ;
                                                 02  12 00252          BNEQ    38$                                             ;
                                                 50  D6 00254          INCL    R0                                              ;
    18  A6                  01                   50  F0 00256 38$:     INSV    R0, #1, #1, 24(EVENT_ENTRY)                     ;
                              19   A6            04  8A 0025C          BICB2   #4, 25(EVENT_ENTRY)                             ; 2214
                                                 50  D4 00260          CLRL    STATUS                                          ; 2225
                                                 6E  D4 00262          CLRL    MODRST                                          ; 2226
                                          07     16  A6 91 00264          CMPB    22(EVENT_ENTRY), #7                             ; 2227
                                                 1B  12 00268          BNEQ    39$                                             ;
                                                 5E  DD 0026A          PUSHL   SP                                              ; 2234
                                             38  A6  9F 0026C          PUSHAB  56(EVENT_ENTRY)                                 ;
                                             34  A6  9F 0026F          PUSHAB  52(EVENT_ENTRY)                                 ; 2233
                                             10  AE  9F 00272          PUSHAB  STMTNO                                          ; 2229
                                             18  AE  9F 00275          PUSHAB  LINENO                                          ;
                                00000000G        00  DD 00278          PUSHL   DBG$RUNFRAME+64                                 ; 2234
                        00000000G  00            06  FB 0027E          CALLS   #6, DBG$PC_TO_LINE_LOOKUP                       ;
                                          6C     50  E8 00285 39$:     BLBS    STATUS, 50$                                     ; 2236
                              34   A6            01  7D 00288          MOVQ    #1, 52(EVENT_ENTRY)                             ; 2239
                                                 66  11 0028C          BRB     50$                                             ; 2016
                                          0C     62  91 0028E 40$:     CMPB    (ADVERB_NODE), #12                              ; 2247
                                                 06  12 00291          BNEQ    41$                                             ;
                              18   A6            20  88 00293          BISB2   #32, 24(EVENT_ENTRY)                            ; 2249
                                                 09  11 00297          BRB     42$                                             ; 2250
                                          0D     62  91 00299 41$:     CMPB    (ADVERB_NODE), #13                              ; 2256
                                                 0A  12 0029C          BNEQ    43$                                             ;
                              18   A6            20  8A 0029E          BICB2   #32, 24(EVENT_ENTRY)                            ; 2258
                              18   A6            10  88 002A2 42$:     BISB2   #16, 24(EVENT_ENTRY)                            ; 2259
                                                 4C  11 002A6          BRB     50$                                             ; 2016
                                          0E     62  91 002A8 43$:     CMPB    (ADVERB_NODE), #14                              ; 2265
                                                 07  12 002AB          BNEQ    44$                                             ;
                              18   A6       80    8F  8A 002AD          BICB2   #128, 24(EVENT_ENTRY)                           ; 2267
                                                 0A  11 002B2          BRB     45$                                             ; 2268
                                          0F     62  91 002B4 44$:     CMPB    (ADVERB_NODE), #15                              ; 2274
                                                 0C  12 002B7          BNEQ    46$                                             ;
                              18   A6       80    8F  88 002B9          BISB2   #128, 24(EVENT_ENTRY)                           ; 2276
                              18   A6       40    8F  88 002BE 45$:     BISB2   #64, 24(EVENT_ENTRY)                            ; 2277
                                                 2F  11 002C3          BRB     50$                                             ; 2016
                                          10     62  91 002C5 46$:     CMPB    (ADVERB_NODE), #16                              ; 2283
                                                 06  12 002C8          BNEQ    47$                                             ;
                              18   A6            08  8A 002CA          BICB2   #8, 24(EVENT_ENTRY)                             ; 2285
                                                 09  11 002CE          BRB     48$                                             ; 2286
                                          11     62  91 002D0 47$:     CMPB    (ADVERB_NODE), #17                              ; 2292
                                                 0A  12 002D3          BNEQ    49$                                             ;
                              18   A6            08  88 002D5          BISB2   #8, 24(EVENT_ENTRY)                             ; 2294
                              18   A6            04  88 002D9 48$:     BISB2   #4, 24(EVENT_ENTRY)                             ; 2295
                                                 15  11 002DD          BRB     50$                                             ; 2016
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                00000000'  EF  9F 002DF 49$:    PUSHAB  P.ABO                                   ; 2302
                           01  DD 002E5         PUSHL   #1
                00028362   8F  DD 002E7         P SHL   #164706
00000000G  00              03  FB 002ED         CALLS   #3, LIB$SIGNAL
           52         08   A2  D0 002F4 50$:    MOVL    8(ADVERB_NODE), ADVERB_NODE             ; 2309
                      FDE8 31  31 002F8         BRW     9$                                      ; 2009
           50         15   A6  9A 002FB 51$:    MOVZBL  21(EVENT_ENTRY), R0                     ; 2316
                           03  13 002FF         BEQL    52$                                     ; 2322
                      0307 31  31 00301         BRW     84$
           03         14   A6  91 00304 52$:    CMPB    20(EVENT_ENTRY), #3                     ; 2324
                           03  12 00308         BNEQ    53$
                      03C8 31  31 0030A         BRW     101$
                        5A D5  0030D 53$:       TSTL    NOUN_NODE                               ; 2334
                           15  12 0030F         BNEQ    54$
                00000000'  EF  9F 00311         PUSHAB  P.ABP                                   ; 2336
                           01  DD 00317         PUSHL   #1
                00028362   8F  DD 00319         PUSHL   #164706
00000000G  00              03  FB 0031F         CALLS   #3, LIB$SIGNAL
           5B              6A  D0 00326 54$:    MOVL    (NOUN_NODE), PRIMARY                    ; 2348
                      20   AE  9F 00329         PUSHAB  DUMMY                                   ; 2353
                      20   AE  9F 0032C         PUSHAB  SYMID_LIST
                           5B  DD 0032F         PUSHL   PRIMARY
00000000G  00              03  FB 00331         CALLS   #3, DBG$NGET_SYMID
                      1C   AE  DD 00338         PUSHL   SYMID_LIST                              ; 2354
00000000G  00              01  FB 0033B         CALLS   #1, DBG$STA_LOCK_SYMID
                           01  DD 00342         PUSHL   #1                                      ; 2360
                      24   AE  9F 00344         PUSHAB  DUMMY
                      28   A6  9F 00347         PUSHAB  40(EVENT_ENTRY)
                           5B  DD 0034A         PUSHL   PRIMARY
00000000G  00              04  FB 0034C         CALLS   #4, DBG$NCOPY_DESC
                00000000G  00  18  AE  9F 00353 PUSHAB  VALUE                                   ; 2368
                      7E   83  8F  9A 00356     MOVZBL  #131, -(SP)
                           5B  DD 0035A         PUSHL   PRIMARY
                00000000G  00  03  FB 0035C     CALLS   #3, DBG$PRIM_TO_VAL
                           57  18  AE  D0 00363 MOVL    VALUE, R7                               ; 2369
           34   A6         14  A7  0C 28 00367 MOVC3   #12, 20(R7), 52(EVENT_ENTRY)           ; 2370
                           19  A6  20 8A 0036D BICB2   #32, 25(EVENT_ENTRY)                    ; 2381
                               14  A6 95 00371 TSTB    20(EVENT_ENTRY)                         ; 2382
                               06  13 00374     BEQL    55$
                      01       14  A6 91 00376 CMPB    20(EVENT_ENTRY), #1                     ; 2383
                               1D  12 0037A     BNEQ    57$
                      04       16  A6 91 0037C 55$:    CMPB    22(EVENT_ENTRY), #4             ; 2385
                               17  13 00380     BEQL    57$
                      79   8F  02  AB 91 00382 CMPB    2(PRIMARY), #121                        ; 2388
                               10  12 00387     BNEQ    57$
                      02       07  AB 91 00389 CMPB    7(PRIMARY), #2                          ; 2390
                               06  13 0038D     BEQL    56$
                      08       07  AB 91 0038F CMPB    7(PRIMARY), #8                          ; 2391
                               04  12 00393     BNEQ    57$
                      19   A6          20 88 00395 56$:    BISB2   #32, 25(EVENT_ENTRY)        ; 2393
                           08  AC  DD 00399 57$:    PUSHL   MESSAGE_VECT                        ; 2400
7E         19   A6             01  EF 0039C     EXTZV   #5, #1, 25(EVENT_ENTRY), -(SP)
                           14  AE  9F 003A2     PUSHAB  ADR_TYP                                 ; 2399
                           40  AE  9F 003A5     PUSHAB  ADDRESS
                               5B  DD 003A8     PUSHL   PRIMARY
                00000000G  00  05  FB 003AA     CALLS   #5, DBG$NGET_ADDRESS
                           03  50  E8 003B1     BLBS    R0, 58$
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                                01F1  31  003B4          BRW     78$                                                    ;
                          52    2C  A6  9E  003B7 58$:   MOVAB   44(EVENT_ENTRY), R2                                   ; 2403
                          62    34  AE  D0  003BB       MOVL    ADDRESS, (R2)                                          ;
                    24          19  A6  05  E0  003BF   BBS     #5, 25(EVENT_ENTRY), 60$                               ; 2416
                                34  AE  DD  003C4       PUSHL   ADDRESS                                                ; 2425
                00000000G       00      01  FB  003C7   CALLS   #1, DBG$IS_IT_ENTRY                                    ;
                                12      50  E8  003CE   BLBS    R0, 59$                                                ;
                                17  16  A7  91  003D1   CMPB    22(R7), #23                                            ; 2437
                                    0C  13  003D5       BEQL    59$                                                    ;
                                20  16  A7  91  003D7   CMPB    22(R7), #32                                            ; 2438
                                    06  13  003DB       BEQL    59$                                                    ;
                                21  16  A7  91  003DD   CMPB    22(R7), #33                                            ; 2439
                                    05  12  003E1       BNEQ    60$                                                    ;
                    62          34  AE  02  C1  003E3 59$:   ADDL3   #2, ADDRESS, (R2)                                ; 2441
                                34  A6  9F  003E8 60$:   PUSHAB  52(EVENT_ENTRY)                                       ; 2449
                00000000G       00      01  FB  003EB   CALLS   #1, DBG$DATA_LENGTH                                    ;
                                50      07  C0  003F2   ADDL2   #7, R0                                                 ;
                7E              50      FD  8F  78  003F5   ASHL    #-3, R0, -(SP)                                         ; 2450
                                        62  DD  003FA   PUSHL   (R2)                                                   ; 2448
                00000000G       00      02  FB  003FC   CALLS   #2, DBG$READ_ACCESS                                    ;
                                50  16  A6  9A  00403   MOVZBL  22(EVENT_ENTRY), R0                                     ; 2456
                                03      50  91  00407   CMPB    R0, #3                                                 ; 2458
                                        29  1F  0040A   BLSSU   61$                                                    ;
                                04      50  91  0040C   CMPB    R0, #4                                                 ;
                                        24  1A  0040F   BGTRU   61$                                                    ;
                                53      62  D0  00411   MOVL    (R2), EVENT_ADDRESS                                    ; 2464
                          10    AE      63  9A  00414   MOVZBL  (EVENT_ADDRESS), OP                                     ; 2467
                                        01  DD  00418   PUSHL   #1                                                     ;
                                    14  AE  9F  0041A   PUSHAB  OP                                                     ;
                                        53  DD  0041D   PUSHL   EVENT_ADDRESS                                          ;
                00000000G       00      03  FB  0041F   CALLS   #3, DBG$WRITE_MEM                                     ;
                                72      50  E8  00426   BLBS    R0, 63$                                                ;
                                        53  DD  00429   PUSHL   EVENT_ADDRESS                                          ; 2470
                                        01  DD  0042B   PUSHL   #1                                                     ;
                                00028220    8F  DD  0042D   PUSHL   #164384                                            ;
                                        7C  11  00433   BRB     67$                                                    ;
                                02      50  91  00435 61$:   CMPB    R0, #2                                         ; 2485
                                        61  12  00438       BNEQ    63$                                                ;
                                        7E  D4  0043A       CLRL    -(SP)                                              ; 2506
                                    24  AE  9F  0043C       PUSHAB  DUMMY                                              ;
                                    1C  AE  9F  0043F       PUSHAB  PRIMARY                                            ;
                                    28  A6  DD  00442       PUSHL   40(EVENT_ENTRY)                                    ;
                00000000G       00      04  FB  00445   CALLS   #4, DBG$COPY_DESC                                     ;
                                53      14  AE  D0  0044C   MOVL    PRIMARY, R3                                        ; 2509
                                0D      04  A3  E9  00450   BLBC    4(R3), 62$                                         ; 2511
                                00028A4A    8F  DD  00454   PUSHL   #166474                                            ;
                00000000G       00      01  FB  0045A   CALLS   #1, LIB$SIGNAL                                       ;
                                    18  AE  9F  00461 62$:   PUSHAB  VALUE                                            ; 2518
                                7E      83  8F  9A  00464   MOVZBL  #131, -(SP)                                        ;
                                        53  DD  00468       PUSHL   R3                                                 ;
                00000000G       00      03  FB  0046A   CALLS   #3, DBG$PRIM_TO_VAL                                   ;
                                    18  AE  9F  00471       PUSHAB  VALUE                                              ; 2521
                                7E      7A  8F  9A  00474   MOVZBL  #122, -(SP)                                        ;
                                    20  AE  DD  00478       PUSHL   VALUE                                              ;
                00000000G       00      03  FB  0047B   CALLS   #3, DBG$PRIM_TO_VAL                                   ;
0000007A  8F    18  BE          08      10  ED  00482   CMPZV   #16, #8, VALUE, #122                                   ; 2526
                                        10  13  0048C       BEQL    64$                                                ;
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                00028A52   8F   DD 0048E            PUSHL   #166482                                    ; 2528
00000000G   00             01   FB 00494            CALLS   #1, LIB$SIGNAL
                      013D 31   0049B 63$:           BRW     81$                                        ;
40000000    8F             62   D1 0049E 64$:       CMPL    (R2), #1073741824                          ; 2541
                           14   1F 004A5            BLSSU   68$                                        ;
                           62   DD 004A7 65$:       PUSHL   (R2)                                       ; 2545
                           01   DD 004A9 66$:       PUSHL   #1                                         ; 2544
                00028230   8F   DD 004AB            PUSHL   #164400                                    ;
00000000G   00             03   FB 004B1 67$:       CALLS   #3, LIB$SIGNAL
                      00ED 31   004B8               BRW     78$                                        ; 2546
                        20 AE   9F 004BB 68$:       PUSHAB  DUMMY                                      ; 2555
                           62   DD 004BE            PUSHL   (R2)                                       ;
00000000G   00             02   FB 004C0            CALLS   #2, DBG$MAP_TO_REG_ADDR
            09             50   E9 004C7            BLBC    R0, 69$                                    ;
                00028CA8   8F   DD 004CA            PUSHL   #167080                                    ; 2558
                      00CE 31   004D0               BRW     77$                                        ;
            50 00000000G   00   9E 004D3 69$:       MOVAB   DBG$RUNFRAME+4, R0                         ; 2562
            50             62   D1 004DA            CMPL    (R2), R0                                   ;
                           0C   1F 004DD            BLSSU   70$                                        ;
            50 00000000G   00   9E 004DF            MOVAB   DBG$RUNFRAME+72, R0                        ; 2565
            50             62   D1 004E6            CMPL    (R2), R0                                   ;
                           BC   1F 004E9            BLSSU   65$                                        ;
                     20    AE   9F 004EB 70$:       PUSHAB  DUMMY                                      ; 2579
                     20    AE   9F 004EE            PUSHAB  SYMID_LIST                                 ;
                     20    AE   DD 004F1            PUSHL   VALUE                                      ;
00000000G   00             03   FB 004F4            CALLS   #3, DBG$NGET_SYMID
                     1C    AE   DD 004FB            PUSHL   SYMID_LIST                                 ; 2580
00000000G   00             01   FB 004FE            CALLS   #1, DBG$STA_LOCK_SYMID
                     20    AE   9F 00505            PUSHAB  DUMMY                                      ; 2586
                     30    A6   9F 00508            PUSHAB  48(EVENT_ENTRY)                            ;
                     20    AE   DD 0050B            PUSHL   VALUE                                      ;
00000000G   00             03   FB 0050E            CALLS   #3, DBG$NCOPY_DESC
          17    A6             08   88 00515            BISB2   #8, 23(EVENT_ENTRY)                    ; 2593
                     08    AC   DD 00519            PUSHL   MESSAGE_VECT                               ; 2600
                     28    AE   9F 0051C            PUSHAB  PAGE_LIST                                  ; 2599
                     28    A6   DD 0051F            PUSHL   40(EVENT_ENTRY)                            ;
00000000G   00             03   FB 00522            CALLS   #3, DBG$NGET_PAGES
            03             50   E8 00529            BLBS    R0, 71$                                    ;
                      FF78 31   0052C               BRW     65$                                        ;
            54       24    AE   D0 0052F 71$:       MOVL    PAGE_LIST, R4                              ; 2624
            52 00000000'   EF   D0 00533 72$:       MOVL    EVENT$PAGE_QUEUE, PAGE_ENTRY               ; 2619
                           55   D4 0053A            CLRL    PAGE_FOUND                                 ; 2620
            50 00000000'   EF   9E 0053C 73$:       MOVAB   EVENT$PAGE_QUEUE, R0                       ; 2621
            50             52   D1 00543            CMPL    PAGE_ENTRY, R0                             ;
                           14   13 00546            BEQL    75$                                        ;
          04    A4       08   A2 D1 00548          CMPL    8(PAGE_ENTRY), 4(R4)                       ; 2624
                           08   12 0054D            BNEQ    74$                                        ;
                     0C    A2   B6 0054F            INCW    12(PAGE_ENTRY)                             ; 2634
            55             01   D0 00552            MOVL    #1, PAGE_FOUND                             ; 2635
                           05   11 00555            BRB     75$                                        ; 2632
            52             62   D0 00557 74$:       MOVL    (PAGE_ENTRY), PAGE_ENTRY                   ; 2643
                           E0   11 0055A            BRB     73$                                        ; 2621
            6D             55   E8 0055C 75$:       BLBS    PAGE_FOUND, 80$                            ; 2651
            53       24    AE   D0 0055F            MOVL    PAGE_LIST, R3                              ; 2658
          2C    AE       04   A3 D0 00563          MOVL    4(R3), ADDRESS                             ;
          30    AE       04   A3 D0 00568          MOVL    4(R3), ADDRESS+4                           ; 2659
                     28    AE   9F 0056D            PUSHAB  PROTECT                                    ; 2663
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                                 0F   DD 00570          PUSHL   #15                                             ;
                                 7E   7C 00572          CLRQ    -(SP)                                           ;
                              3C AE   9F 00574          PUSHAB  ADDRESS                                         ;
                00000000G     00      05 FB 00577          CALLS   #5, SYS$SETPRT                             ;
                              06      50 E8 0057E          BLBS    R0, 76$                                    ;
                              04 A3   DD 00581          PUSHL   4(R3)                                           ; 2666
                           FF22       31 00584          BRW     66$                                        ;
                                 7E   D4 00587 76$:     CLRL    -(SP)                                           ; 2671
                              2C AE   DD 00589          PUSHL   PROTECT                                         ;
                                 7E   7C 0058C          CLRQ    -(SP)                                           ;
                              3C AE   9F 0058E          PUSHAB  ADDRESS                                         ;
                00000000G     00      05 FB 00591          CALLS   #5, SYS$SETPRT                             ;
                              11      50 E8 00598          BLBS    R0, 79$                                    ;
                          000284C4 8F   DD 0059B          PUSHL   #165060                                         ; 2674
                00000000G     00      01 FB 005A1 77$:     CALLS   #1, LIB$SIGNAL                             ;
                              50      04 D0 005A8 78$:     MOVL    #4, R0                                     ; 2675
                                      04 005AB             RET                                                ;
                                 04   DD 005AC 79$:     PUSHL   #4                                              ; 2677
                00000000G     00      01 FB 005AE          CALLS   #1, DBG$GET_MEMORY                         ;
                              52      50 D0 005B5          MOVL    R0, PAGE_ENTRY                             ;
                00000000'     EF      62 0E 005B8          INSQUE  (PAGE_ENTRY), EVENT$PAGE_QUEUE             ; 2678
                              50 24   AE D0 005BF          MOVL    PAGE_LIST, R0                              ; 2680
                           08 A2   04 A0 D0 005C3          MOVL    4(R0), 8(PAGE_ENTRY)                       ;
                           0C A2   01 B0 005C8          MOVW    #1, 12(PAGE_ENTRY)                         ; 2681
                           24 AE   24 BE D0 005CC 80$:     MOVL    @PAGE_LIST, PAGE_LIST                      ; 2683
                              54   24 AE D0 005D1          MOVL    PAGE_LIST, R4                              ; 2685
                              03      54 E9 005D5          BLBC    R4, 81$                                    ;
                                   FF58 31 005D8          BRW     72$                                        ;
                              5A      08 AA D0 005DB 81$:     MOVL    8(NOUN_NODE), NOUN_NODE                    ; 2693
                                      52 13 005DF          BEQL    87$                                        ; 2700
                                      10 DD 005E1          PUSHL   #16                                        ; 2709
                00000000G     00      01 FB 005E3          CALLS   #1, DBG$GET_MEMORY                         ;
                              56      50 D0 005EA          MOVL    R0, EVENT_ENTRY                            ;
                66    3C      BE 0040 8F 28 005ED          MOVC3   #64, @EVENT_QUEUE, (EVENT_ENTRY)           ; 2713
                      3C      AE      66 0E 005F4          INSQUE  (EVENT_ENTRY), EVENT_QUEUE                 ; 2719
                                 20   A6 D5 005F8          TSTL    32(EVENT_ENTRY)                            ; 2725
                                      03 13 005FB          BEQL    82$                                        ;
                                 08   A8 D6 005FD          INCL    8(WHEN_ENTRY)                              ; 2728
                                 24   A6 D5 00600 82$:     TSTL    36(EVENT_ENTRY)                            ; 2734
                                      03 13 00603          BEQL    83$                                        ;
                                 08   A9 D6 00605          INCL    8(DO_ENTRY)                                ; 2737
                                   FD1B 31 00608 83$:     BRW     54$                                        ; 2700
                              01      50 91 0060B 84$:     CMPB    R0, #1                                     ; 2751
                                      03 13 0060E          BEQL    85$                                        ;
                                   00A8 31 00610          BRW     99$                                        ;
                              50   16 A6 9A 00613 85$:     MOVZBL  22(EVENT_ENTRY), R0                        ; 2752
                              05      50 91 00617          CMPB    R0, #5                                     ; 2754
                                      0A 12 0061A          BNEQ    86$                                        ;
                           28 A6 00000000' EF 9E 0061C          MOVAB   DBG$OPCODES_CALL, 40(EVENT_ENTRY)      ; 2755
                                      0D 11 00624          BRB     87$                                        ;
                              06      50 91 00626 86$:     CMPB    R0, #6                                     ; 2756
                                      0A 12 00629          BNEQ    88$                                        ;
                           28 A6 00000000' EF 9E 0062B          MOVAB   DBG$OPCODES_BRANCH, 40(EVENT_ENTRY)    ; 2757
                                      7C 11 00633 87$:     BRB     97$                                        ;
                              08      50 91 00635 88$:     CMPB    R0, #8                                     ; 2758
                                      74 13 00638          BEQL    96$                                        ;
                              09      50 91 0063A          CMPB    R0, #9                                     ; 2760
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                                                        6A  12 0063D          BNEQ    95$                                     ;
                                                        10  DD 0063F          PUSHL   #16                                     ; 2769
                                 000000000G  00         01  FB 00641          CALLS   #1, DBG$GET_MEMORY                      ;
                                             57         50  D0 00648          MOVL    R0, OPCODE_LIST                         ;
                                                        5A  D5 0064B          TSTL    NOUN_NODE                               ; 2779
                                                        2A  12 0064D          BNEQ    90$                                     ;
            0C          04  BC                  08      08  ED 0064F          CMPZV   #8, #8, @VERB_NODE, #12                 ; 2780
                                                        08  13 00655          BEQL    89$                                     ;
            0B          04  BC                  08      08  ED 00657          CMPZV   #8, #8, @VERB_NODE, #11                 ; 2781
                                                        1A  12 0065D          BNEQ    90$                                     ;
                            67 00000000'  EF      0040  8F  28 0065F 89$:     MOVC3   #64, DBG$OPCODES_STEP_USER, (OPCODE_LIST)  ; 2784
                 00000000'  EF 00000000'  EF      0040  8F  28 00669          MOVC3   #64, DBG$OPCODES_STEP_USER, -           ; 2785
                                                                                      DBG$OPCODES_USER
                                                        14  11 00677          BRB     91$                                     ; 2779
    0040    8F              00               6E          00  2C 00679 90$:     MOVC5   #0, (SP), #0, #64, (OPCODE_LIST)        ; 2789
                                                        67      00680
    0040    8F              00               6E          00  2C 00681          MOVC5   #0, (SP), #0, #64, DBG$OPCODES_USER      ; 2790
                                                 00000000'  EF      00688
                                                        5A  D5 0068D 91$:     TSTL    NOUN_NODE                               ; 2798
                                                        12  13 0068F          BEQL    94$                                     ;
                            00                  67          6A  E2 00691          BBSS    (NOUN_NODE), (OPCODE_LIST), 92$         ; 2800
                            00 00000000'        EF          6A  E2 00695 92$:     BBSS    (NOUN_NODE), DBG$OPCODES_USER, 93$      ; 2801
                                                5A      08  AA  D0 0069D 93$:     MOVL    8(NOUN_NODE), NOUN_NODE                 ; 2802
                                                        EA  11 006A1          BRB     91$                                     ;
                                        28      A6          57  D0 006A3 94$:     MOVL    OPCODE_LIST, 40(EVENT_ENTRY)            ; 2808
                                                        2C  11 006A7          BRB     101$                                    ; 2752
                                                07          50  91 006A9 95$:     CMPB    R0, #7                                  ; 2812
                                                        05  12 006AC          BNEQ    98$                                     ;
                                                    28  A6  D4 006AE 96$:     CLRL    40(EVENT_ENTRY)                         ; 2813
                                                        22  11 006B1 97$:     BRB     101$                                    ;
                                                 00000000'  EF  9F 006B3 98$:     PUSHAB  P.ABQ                                   ; 2819
                                                        0B  11 006B9          BRB     100$                                    ;
                                                02          50  91 006BB 99$:     CMPB    R0, #2                                  ; 2826
                                                        15  13 006BE          BEQL    101$                                    ;
                                                 00000000'  EF  9F 006C0          PUSHAB  P.ABR                                   ; 2832
                                                        01  DD 006C6 100$:     PUSHL   #1                                      ;
                                                 00028362   8F  DD 006C8          PUSHL   #164706                                 ;
                                 000000000G  00         03  FB 006CE          CALLS   #3, LIB$SIGNAL                          ;
                                             03      14  A6  91 006D5 101$:     CMPB    20(EVENT_ENTRY), #3                     ; 2839
                                                        03  13 006D9          BEQL    102$                                    ;
                                                    0128    31 006DB          BRW     112$                                    ;
    0B          04  B(                  08              08  ED 006DE 102$:     CMPZV   #8, #8, @VERB_NODE, #11                 ; 2847
                                                        0B  12 006E4          BNEQ    103$                                    ;
                                                        01  DD 006E6          PUSHL   #1                                      ; 2849
                                 000000000G  00         01  FB 006E8          CALLS   #1, DBG$SET_STP_LVL                     ;
                                                        34  11 006EF          BRB     105$                                    ;
                                            0F  00000000G   00  E9 006F1 103$:     BLBC    DBG$GB_EXC_BRE_FLAG, 104$               ; 2861
                                                 00028E38   8F  DD 006F8          PUSHL   #167480                                 ; 2863
                                 000000000G  00         01  FB 006FE          CALLS   #1, LIB$SIGNAL                          ;
                                                        1E  11 00705          BRB     105$                                    ;
                                            50  00000000G   00  D0 00707 104$:     MOVL    DBG$RUNFRAME+64, R0                     ; 2874
                        60                  01          00  0C 0070E          PROBER  #0, #1, (R0)                            ;
                                                        13  12 00712          BNEQ    106$                                    ;
                                                        50  DD 00714          PUSHL   R0                                      ; 2876
                                                        01  DD 00716          PUSHL   #1                                      ;
                                                 000281E0   8F  DD 00718          PUSHL   #164320                                 ;
                                 000000000G  00         03  FB 0071E          CALLS   #3, LIB$SIGNAL                          ;
```

```
                                                    71  11 00725 105$:  BRB     109$                                                   ;
                                                    02  DD 00727 106$:  PUSHL   #2                                                     ; 2887
                                 00000000G      00      01  FB 00729        CALLS   #1, DBG$SET_STP_LVL                                     ;
                                 00000000G      00   1C 00  A6  D0 00730        MOVL    28(EVENT_ENTRY), DBG$GL_STEP_NUM                ; 2892
                                                    5E  13 00738        BEQL    109$                                                    ; 2898
                                                56      66  0F 0073A        REMQUE  (EVENT_ENTRY), EVENT_ENTRY                      ; 2907
                                 00000000'      EF      66  0E 0073D        INSQUE  (EVENT_ENTRY), EVENT$CMD_QUEUE                  ; 2908
                                       08       A6      56  D0 00744        MOVL    EVENT_ENTRY, 8(EVENT_ENTRY)                     ; 2914
                                       0C       A6      56  D0 00748        MOVL    EVENT_ENTRY, 12(EVENT_ENTRY)                    ; 2915
                                                04   16 A6  91 0074C        CMPB    22(EVENT_ENTRY), #4                             ; 2923
                                                    40  12 00750        BNEQ    108$                                                    ;
                                                50 00000000G    00      D0 00752        MOVL    DBG$RUNFRAME+64, R0                     ; 2933
                                                51 00000000G    00      D0 00759        MOVL    DBG$RUNFRAME+56, R1                     ; 2934
                                       20       A6      50      7D 00760        MOVQ    R0, 32(EVENT_ENTRY)                             ; 2933
                                60              01      00      0C 00764        PROBER  #0, #1, (R0)                                    ; 2935
                                                    16  13 00768        BEQL    107$                                                    ;
                                                52      60      90 0076A        MOVB    (R0), INSTRUCTION                               ; 2938
                                                04      52      91 0076D        CMPB    INSTRUCTION, #4                                 ; 2939
                                                    0E  12 00770        BNEQ    107$                                                    ;
                                                50      51      D0 00772        MOVL    R1, STACK_FRAME                                 ; 2942
                                60              14      00      0C 00775        PROBER  #0, #20, (STACK_FRAME)                          ; 2943
                                                    05  13 00779        BEQL    107$                                                    ;
                                       24       A6   0C A0  D0 0077B        MOVL    12(STACK_FRAME), 36(EVENT_ENTRY)                ; 2946
                                                    05  DD 00780 107$:  PUSHL   #5                                                     ; 2952
                                 00000000G      00      01  FB 00782        CALLS   #1, DBG$GET_MEMORY                                      ;
                                       3C       A6      50      D0 00789        MOVL    CALL_FRAME, 60(EVENT_ENTRY)                     ; 2953
                                60     24       B6      14      28 0078D        MOVC3   #20, @36(EVENT_ENTRY), (CALL_FRAME)             ; 2954
                                                00000000G       00  94 00792 108$:  CLRB    DBG$GB_TAKE_CMD                         ; 2960
                                                57 00000000G    00      D0 00798 109$:  MOVL    DBG$GB_STP_PTR, R7                      ; 2972
                                                67      16      A6      90 0079F        MOVB    22(EVENT_ENTRY), (R7)                   ; 2973
                                                50      18      A6      9E 007A3        MOVAB   24(EVENT_ENTRY), R0                     ; 2975
                             51                 60              01      01  EF 007A7        EXTZV   #1, #1, (R0), R1                        ;
                          01 A7                 01              00      51  F0 007AC        INSV    R1, #0, #1, 1(R7)                       ;
                             51                 60              01      03  EF 007B2        EXTZV   #3, #1, (R0), R1                        ; 2977
                             67                 01              09      51  F0 007B7        INSV    R1, #9, #1, (R7)                        ;
                             51                 60              01      05  EF 007BC        EXTZV   #5, #1, (R0), R1                        ; 2979
                             67                 01              0A      51  F0 007C1        INSV    R1, #10, #1, (R7)                       ;
                             51                 60              01      07  EF 007C6        EXTZV   #7, #1, (R0), R1                        ; 2981
                             67                 01              0B      51  F0 007CB        INSV    R1, #11, #1, (R7)                       ;
                             51                 60              01      09  EF 007D0        EXTZV   #9, #1, (R0), R1                        ; 2983
                             67                 01              0C      51  F0 007D5        INSV    R1, #12, #1, (R7)                       ;
                             0B           04    BC              08      08  ED 007DA        CMPZV   #8, #8, @VERB_NODE, #11                 ; 2989
                                                    21  12 007E0        BNEQ    111$                                                    ;
                                                09      16      A6      91 007E2        CMPB    22(EVENT_ENTRY), #9                     ; 2992
                                                    18  12 007E6        BNEQ    110$                                                    ;
                                 00000000'  EF 00000000'    EF      0040    8F  28 007E8        MOVC3   #64, DBG$OPCODES_USER, -                ; 2995
                                                                                                    DBG$OPCODES_STEP_USER
                                                04  A7 00000000'  EF  9E 007F6        MOVAB   DBG$OPCODES_STEP_USER, 4(R7)            ; 2996
                                                    03  11 007FE        BRB     111$                                                    ; 2992
                                                        04  A7  D4 00800 110$:  CLRL    4(R7)                                           ; 3000
                                                        00D5    31 00803 111$:  BRW     128$                                            ; 2989
                                                50      3C      AE      9E 00806 112$:  MOVAB   EVENT_QUEUE, R0                         ; 3021
                                                50      3C      AE      D1 0080A        CMPL    EVENT_QUEUE, R0                         ;
                                                    F3  13 0080E        BEQL    111$                                                    ;
                                                56      3C      AE      D0 00810        MOVL    EVENT_QUEUE, EVENT_ENTRY                ; 3028
                                                52 00000000'    EF      D0 00814        MOVL    EVENT$CMD_QUEUE, QUEUE_ENTRY            ; 3033
                                                54              62      D0 0081B 113$:  MOVL    (QUEUE_ENTRY), NEXTQ_ENTRY              ; 3034
```

```
                        50 00000000'   EF   9E 0081E          MOVAB   EVENT$CMD_QUEUE, R0                          ; 3039
                        50             52   D1 00825          CMPL    QUEUE_ENTRY, R0
                                       03   12 00828          BNEQ    114$
                                     0099   31 0082A          BRW     127$
                        53       14    A2   9E 0082D 114$:    MOVAB   20(QUEUE_ENTRY), R3                         ; 3046
                                       63   D5 00831          TSTL    (R3)
                                       74   19 00833          BLSS    124$
                        50       15    A6   9A 00835          MOVZBL  21(EVENT_ENTRY), R0                         ; 3054
                        50       01    A3   91 00839          CMPB    1(R3), R0                                   ; 3055
                                       6A   12 0083D          BNEQ    124$
                        50             50   D5 0083F          TSTL    R0                                          ; 3071
                                       35   12 00841          BNEQ    118$
                        50       16    A6   9A 00843          MOVZBL  22(EVENT_ENTRY), CODE_1                     ; 3081
                        51       02    A3   9A 00847          MOVZBL  2(R3), CODE_2                               ; 3082
                        03             50   D1 0084B          CMPL    CODE_1, #3                                  ; 3083
                                       0F   13 0084E          BEQL    115$
                        04             50   D1 00850          CMPL    CODE_1, #4                                  ; 3084
                                       0A   13 00853          BEQL    115$
                        03             51   D1 00855          CMPL    CODE_2, #3                                  ; 3085
                                       05   13 00858          BEQL    115$
                        04             51   D1 0085A          CMPL    CODE_2, #4                                  ; 3086
                                       09   12 0085D          BNEQ    117$
                    2C  A2       2C    A6   D1 0085F 115$:    CMPL    44(EVENT_ENTRY), 44(QUEUE_ENTRY)            ; 3089
                                       5A   12 00864 116$:    BNEQ    126$
                                       3C   11 00866          BRB     123$
                                 34    A2   9F 00868 117$:    PUSHAB  52(QUEUE_ENTRY)                             ; 3092
                                 34    A6   9F 0086B          PUSHAB  52(EVENT_ENTRY)                             ; 3091
                0000V   CF                 02   FB 0086E          CALLS   #2, COMPARE_VMSDESC                         ; 3092
                        4A                 50   E9 00873          BLBC    R0, 126$
                                           2C   11 00876          BRB     123$                                    ; 3095
                        01                 50   91 00878 118$:    CMPB    R0, #1                                  ; 3103
                                           22   12 0087B          BNEQ    122$
                  04              05   16    A6   8F 0087D          CASEB   22(EVENT_ENTRY), #5, #4                 ; 3104
0011              000A            000A         000A     00882 119$:    .WORD   120$-119$,-
                                               0011     0088A                  120$-119$,-
                                                                               120$-119$,-
                                                                               121$-119$,-
                                                                               121$-119$
                    02    A3       16    A6   91 0088C 120$:    CMPB    22(EVENT_ENTRY), 2(R3)                  ; 3109
                                           D1   11 00891          BRB     116$
                          08       02    A3   91 00893 121$:    CMPB    2(R3), #8                               ; 3114
                                           0B   13 00897          BEQL    123$
                          09       02    A3   91 00899          CMPB    2(R3), #9                               ; 3116
                                           C5   11 0089D          BRB     116$
                          02                 50   91 0089F 122$:    CMPB    R0, #2                              ; 3127
                                           07   12 008A2          BNEQ    125$
                    03    A3       80    8F   88 008A4 123$:    BISB2   #128, 3(R3)                             ; 3128
                                           15   11 008A9 124$:    BRB     126$
                                00000000'  EF   9F 008AB 125$:    PUSHAB  P.ABS                                   ; 3134
                                           01   DD 008B1          PUSHL   #1
                                00028362   8F   DD 008B3          PUSHL   #164706
                00000000G       00                 03   FB 008B9          CALLS   #3, LIB$SIGNAL
                                52                 54   D0 008C0 126$:    MOVL    NEXTQ_ENTRY, QUEUE_ENTRY        ; 3145
                                                 FF55   31 008C3          BRW     113$                            ; 3146
                                56                 66   0F 008C6 127$:    REMQUE  (EVENT_ENTRY), EVENT_ENTRY      ; 3153
                00000000'       FF                 66   0E 008C9          INSQUE  (EVENT_ENTRY), @EVENT$CMD_QUEUE+4 ; 3154
                          08    A6                 56   D0 008D0          MOVL    EVENT_ENTRY, 8(EVENT_ENTRY)     ; 3160
```

```
                    0C   A6              56  D0 008D4           MOVL    EVENT_ENTRY, 12(EVENT_ENTRY)                ; 3161
                       FF2B             31  008D8              BRW     112$                                        ; 3021
                         56        3C    AE  D0 008DB 128$:     MOVL    EVENT_QUEUE, EVENT_ENTRY                    ; 3170
                         50        3C    AE  9E 008DF 129$:     MOVAB   EVENT_QUEUE, R0                             ; 3171
                         50              56  D1 008E3           CMPL    EVENT_ENTRY, R0                             ;
                                         0F  13 008E6           BEQL    130$                                        ;
                         52              66  D0 008E8           MOVL    (EVENT_ENTRY), NEW_EVENT_ENTRY              ; 3175
                                         56  DD 008EB           PUSHL   EVENT_ENTRY                                 ; 3176
                 0000V   CF              01  FB 008ED           CALLS   #1, DELETE_EVENT_ENTRY                      ;
                         56              52  D0 008F2           MOVL    NEW_EVENT_ENTRY, EVENT_ENTRY                ; 3177
                                         E8  11 008F5           BRB     129$                                        ; 3171
                         50              01  D0 008F7 130$:     MOVL    #1, R0                                      ; 3183
                                             04 008FA           RET                                                 ; 3185

; Routine Size:  2299 bytes,    Routine Base:  DBG$CODE + 0AEB
```

```
;3062     3186  1 GLOBAL ROUTINE DBG$EVENT_SHOW_CANCEL_SYNTAX(INPUT_DESC,
;3063     3187  1                                                VERB_NODE, MESSAGE_VECT) =
;3064     3188  1 !
;3065     3189  1 ! FUNCTION
;3066     3190  1 !       This routine parses a show or cancel break, trace, or watch point
;3067     3191  1 !       command,
;3068     3192  1 !       after the '[SHOW!CANCEL] BREAK', '[SHOW!CANCEL] TRACE', or
;3069     3193  1 !       '[SHOW!CANCEL] WATCH' has been parsed.  This routine is called
;3070     3194  1 !       from DBGNSET.
;3071     3195  1 !
;3072     3196  1 !       The following syntax is accepted:
;3073     3197  1 !
;3074     3198  1 !       <event>
;3075     3199  1 !
;3076     3200  1 !       If the event is a watchpoint, <event> is:
;3077     3201  1 !
;3078     3202  1 !       /ALL !
;3079     3203  1 !       [ <address> [ , <address> ]*]
;3080     3204  1 !
;3081     3205  1 !       otherwise, <event> is:
;3082     3206  1 !
;3083     3207  1 !       /EXCEPTION !
;3084     3208  1 !       /CALL !
;3085     3209  1 !       /RETURN !
;3086     3210  1 !       /BRANCH !
;3087     3211  1 !       /LINE !
;3088     3212  1 !       /INSTRUCTION [ = ( <mnemonic> [ , <mnemonic> ] ) ]
;3089     3213  1 !       /ALL !
;3090     3214  1 !       [ <address> [ , <address> ]*]
;3091     3215  1 !
;3092     3216  1 ! INPUTS
;3093     3217  1 !       INPUT_DESC:     The current command line input descriptor.
;3094     3218  1 !       VERB_NODE:      A pointer to a DEBUG verb node, with the COMPOSITE
;3095     3219  1 !                       attribute set to:
;3096     3220  1 !
;3097     3221  1 !                           EVENT$K_SHOW_BREAK, EVENT$K_SHOW_TRACE,
;3098     3222  1 !                           EVENT$K_SHOW_WATCH,
;3099     3223  1 !                           EVENT$K_CANCEL_BREAK, EVENT$K_CANCEL_TRACE,
;3100     3224  1 !                           EVENT$K_CANCEL_WATCH.
;3101     3225  1 !
;3102     3226  1 !       MESSAGE_VECT:   The address of a longword to contain the address
;3103     3227  1 !                       of a message argument vector.
;3104     3228  1 !
;3105     3229  1 ! OUTPUTS
;3106     3230  1 !       The parse tree headed by VERB_NODE is created to represent the
;3107     3231  1 !       command parsed.  Errors cause this routine tc abort.
;3108     3232  1 !
;3109     3233  2     BEGIN
;3110     3234  2
;3111     3235  2     MAP
;3112     3236  2         VERB_NODE :     REF DBG$VERB_NODE;      ! Verb node pointer
;3113     3237  2
;3114     3238  2     LOCAL
;3115     3239  2         STATUS,                                 ! Returned status
;3116     3240  2         ADVERB_NODE :   REF DBG$ADVERB_NODE,    ! Adverb node pointer
;3117     3241  2         ADVERB_LINK :   REF DBG$ADVERB_NODE,    ! Adverb node link
;3118     3242  2         NOUN_NODE :     REF DBG$NOUN_NODE,      ! Noun node pointer
```

```
;  3119          3243  2          NOUN_LINK :     REF DBG$NOUN_NODE;      ! Noun node link
;  3120          3244  2
;  3121          3245  2      BIND
;  3122          3246  2
;  3123          3247  2
;  3124          3248  2          ! Define the character strings to parse.
;  3125          3249  2          !
;  3126          3250  2          DBG$CS_EXCEPTION =      $AC ('EXCEPTION'),
;  3127          3251  2          DBG$CS_INSTRUCTION =    $AC ('INSTRUCTION'),
;  3128          3252  2          DBG$CS_CALL =           $AC ('CALL'),
;  3129          3253  2          DBG$CS_RETURN =         $AC ('RETURN'),
;  3130          3254  2          DBG$CS_BRANCH =         $AC ('BRANCH'),
;  3131          3255  2          DBG$CS_LINE =           $AC ('LINE'),
;  3132          3256  2          DBG$CS_ALL =            $AC ('ALL'),
;  3133          3257  2          DBG$CS_COMMA =          $AC (','),
;  3134          3258  2          DBG$CS_SLASH =          $AC ('/'),
;  3135          3259  2          DBG$CS_CR -             UPLIT BYTE (1, DBG$K_CAR_RETURN);
;  3136          3260  2
;  3137          3261  2
;  3138          3262  2      ! Initialize status to success, in case we don't need to
;  3139          3263  2      ! parse any addresses.
;  3140          3264  2      !
;  3141          3265  2      STATUS = STS$K_SUCCESS;
;  3142          3266  2
;  3143          3267  2
;  3144          3268  2      ! Initialize the verb's adverb and noun pointers to null.
;  3145          3269  2      !
;  3146          3270  2      VERB_NODE [DBG$L_VERB_ADVERB_PTR] = 0;
;  3147          3271  2      VERB_NODE [DBG$L_VERB_OBJECT_PTR] = 0;
;  3148          3272  2
;  3149          3273  2
;  3150          3274  2      ! Initialize the adverb and noun links.
;  3151          3275  2      !
;  3152          3276  2      ADVERB_LINK = VERB_NODE [DBG$L_VERB_ADVERB_PTR];
;  3153          3277  2      NOUN_LINK = VERB_NODE [DBG$L_VERB_OBJECT_PTR];
;  3154          3278  2
;  3155          3279  2
;  3156          3280  2      ! Case on the verb composite - the command type is [SHOW!CANCEL] BREAK,
;  3157          3281  2      ! [SHOW!CANCEL] TRACE, or [SHOW!CANCEL] WATCH.
;  3158          3282  2      !
;  3159          3283  2      SELECTONE .VERB_NODE [DBG$B_VERB_COMPOSITE] OF
;  3160          3284  2          SET
;  3161          3285  2
;  3162          3286  2
;  3163          3287  2          ! [SHOW!CANCEL] BREAK and [SHOW!CANCEL] TRACE come here,
;  3164          3288  2          ! to determine the event type.
;  3165          3289  2          !
;  3166          3290  2          [EVENT$K_SHOW_BREAK, EVENT$K_CANCEL_BREAK,
;  3167          3291  2           EVENT$K_SHOW_TRACE, EVENT$K_CANCEL_TRACE]:
;  3168          3292  3              BEGIN
;  3169          3293  3
;  3170          3294  3
;  3171          3295  3              ! Parse the command according to the following syntax:
;  3172          3296  3              !
;  3173          3297  3              !   /EXCEPTION
;  3174          3298  3              !   /CALL
;  3175          3299  3              !   /RETURN
```

```
;  3176          3300  3          !   /BRANCH
;  3177          3301  3          !   /LINE
;  3178          3302  3          !   /INSTRUCTION
;  3179          3303  3          !   /ALL
;  3180          3304  3          !   [ <address> [ , <address> ]*]
;  3181          3305  3          !
;  3182          3306  3          ! First, look for a '/'...
;  3183          3307  3          !
;  3184          3308  4          IF MATCH (DBG$CS_SLASH)
;  3185          3309  3          THEN
;  3186          3310  4              BEGIN
;  3187          3311  4
;  3188          3312  4
;  3189          3313  4              ! Get an node for the qualifier.
;  3190          3314  4              !
;  3191          3315  4              GET_ADVERB_NODE;
;  3192          3316  4
;  3193          3317  4
;  3194          3318  4              ! Parse the qualifier.
;  3195          3319  4              !
;  3196          3320  4              SELECTONE TRUE OF
;  3197          3321  4                  SET
;  3198          3322  4
;  3199          3323  4
;  3200          3324  4                  ! Parse /EXECEPTION.
;  3201          3325  4                  !
;  3202          3326  4                  [MATCH (DBG$CS_EXCEPTION)]:
;  3203          3327  4                      ADVERB_NODE [DBG$B_ADVERB_LITERAL] =
;  3204          3328  4                          ADVERB_EXCEPTION;
;  3205          3329  4
;  3206          3330  4
;  3207          3331  4                  ! Parse /CALL.
;  3208          3332  4                  !
;  3209          3333  4                  [MATCH (DBG$CS_CALL)]:
;  3210          3334  4                      ADVERB_NODE [DBG$B_ADVERB_LITERAL] =
;  3211          3335  4                          ADVERB_CALL;
;  3212          3336  4
;  3213          3337  4
;  3214          3338  4                  ! Parse /BRANCH.
;  3215          3339  4                  !
;  3216          3340  4                  [MATCH (DBG$CS_BRANCH)]:
;  3217          3341  4                      ADVERB_NODE [DBG$B_ADVERB_LITERAL] =
;  3218          3342  4                          ADVERB_BRANCH;
;  3219          3343  4
;  3220          3344  4
;  3221          3345  4                  ! Parse /LINE.
;  3222          3346  4                  !
;  3223          3347  4                  [MATCH (DBG$CS_LINE)]:
;  3224          3348  4                      ADVERB_NODE [DBG$B_ADVERB_LITERAL] =
;  3225          3349  4                          ADVERB_LINE;
;  3226          3350  4
;  3227          3351  4
;  3228          3352  4                  ! Parse /INSTRUCTION
;  3229          3353  4                  !
;  3230          3354  4                  [MATCH (DBG$CS_INSTRUCTION)]:
;  3231          3355  4                      ADVERB_NODE [DBG$B_ADVERB_LITERAL] =
;  3232          3356  4                          ADVERB_INSTRUCTION;
```

```
;  3233          3357  4
;  3234          3358  4
;  3235          3359  4                    ! Parse /ALL
;  3236          3360  4                    !
;  3237          3361  4                    [MATCH (DBG$CS_ALL)]:
;  3238          3362  4                        ADVERB_NODE [DBG$B_ADVERB_LITERAL] =
;  3239          3363  4                            ADVERB_ALL;
;  3240          3364  4
;  3241          3365  4
;  3242          3366  4                    ! Otherwise, we've got a syntax error....
;  3243          3367  4                    !
;  3244          3368  4                    [OTHERWISE]:
;  3245          3369  4                        SYNTAX_ERROR;
;  3246          3370  4                    TES
;  3247          3371  4                END
;  3248          3372  4
;  3249          3373  3            ELSE
;  3250          3374  3
;  3251          3375  3
;  3252          3376  3                ! Parse the defaulting <address> [ , <address> ]*.
;  3253          3377  3                !
;  3254          3378  4                BEGIN
;  3255          3379  4
;  3256          3380  4
;  3257          3381  4                ! If we're not standing on a <cr>, get the
;  3258          3382  4                ! <address> [ , <address> ], as long as
;  3259          3383  4                ! an <address> is terminated with a ','.
;  3260          3384  4                !
;  3261          3385  5                IF      (NOT MATCH (DBG$CS_CR))
;  3262          3386  4                THEN
;  3263          3387  4                    DO
;  3264          3388  5                    BEGIN
;  3265          3389  5
;  3266          3390  5                    ! Get a noun node for an <address>.
;  3267          3391  5                    !
;  3268          3392  5                    GET_NOUN_NODE;
;  3269          3393  5
;  3270          3394  5
;  3271          3395  5                    ! Get an <address> - the is a status warning
;  3272          3396  5                    ! if more is on the line.
;  3273          3397  5                    !
;  3274          3398  5                    STATUS = DBG$NPARSE_ADDRESS(.INPUT_DESC,
;  3275          3399  5                                NOUN_NODE[DBG$L_NOUN_VALUE],
;  3276          3400  5                                .DBG$GB_RADIX[DBG$B_RADIX_INPUT],
;  3277          3401  5                                TOKEN$K_TERM_COMMA, .MESSAGE_VECT);
;  3278          3402  5
;  3279          3403  5
;  3280          3404  5                    ! If the status indicates success, there is no
;  3281          3405  5                    ! more on the line, and we exit this loop.
;  3282          3406  5                    !
;  3283          3407  5                    IF .STATUS EQLU STS$K_SUCCESS
;  3284          3408  5                    THEN
;  3285          3409  5                        EXITLOOP;
;  3286          3410  5
;  3287          3411  5
;  3288          3412  5                    ! If the status is not a warning, something is
;  3289          3413  5                    ! wrong, so return with a failure.
```

```
;  3290     3414  5                    !
;  3291     3415  5                    IF .STATUS NEQU STS$K_WARNING
;  3292     3416  5                    THEN
;  3293     3417  5                        RETURN .STATUS
;  3294     3418  5                    END
;  3295     3419  4                WHILE (MATCH (DBG$CS_COMMA));
;  3296     3420  4
;  3297     3421  3            END;
;  3298     3422  3
;  3299     3423  2        END;
;  3300     3424  2
;  3301     3425  2
;  3302     3426  2        ! Parse [SHOW|CANCEL] WATCH [[ /ALL | <address> [ , <address> ]*]].
;  3303     3427  2        !
;  3304     3428  2        [EVENT$K_SHOW_WATCH, EVENT$K_CANCEL_WATCH]:
;  3305     3429  3            BEGIN
;  3306     3430  4            IF MATCH (DBG$CS_SLASH)
;  3307     3431  3            THEN
;  3308     3432  4                BEGIN
;  3309     3433  4                GET_ADVERB_NODE;
;  3310     3434  4                NEED_MATCH (DBG$CS_ALL);
;  3311     3435  4                ADVERB_NODE [DBG$B_ADVERB_LITERAL] = ADVERB_ALL;
;  3312     3436  4                END
;  3313     3437  4
;  3314     3438  3            ELSE
;  3315     3439  4                BEGIN
;  3316     3440  5                IF NOT MATCH (DBG$CS_CR)
;  3317     3441  4                THEN
;  3318     3442  4                    ! Get the <address> [ , <address> ], as long as
;  3319     3443  4                    ! an <address> is terminated with a ','.
;  3320     3444  4                    !
;  3321     3445  4                    DO
;  3322     3446  5                        BEGIN
;  3323     3447  5
;  3324     3448  5
;  3325     3449  5                        ! Get a noun node for an <address>.
;  3326     3450  5                        !
;  3327     3451  5                        GET_NOUN_NODE;
;  3328     3452  5
;  3329     3453  5
;  3330     3454  5                        ! Get an <address> - the is a status warning
;  3331     3455  5                        ! if more is on the line.
;  3332     3456  5                        !
;  3333     3457  5                        STATUS - DBG$NPARSE_ADDRESS(.INPUT_DESC,
;  3334     3458  5                                    NOUN_NODE[DBG$L_NOUN_VALUE],
;  3335     3459  5                                    .DBG$GB_RADIX[DBG$B_RADIX_INPUT],
;  3336     3460  5                                    TOKEN$K_TERM_COMMA, .MESSAGE_VECT);
;  3337     3461  5
;  3338     3462  5
;  3339     3463  5                        ! If the status indicates success, there is no
;  3340     3464  5                        ! more on the line, and we exit this loop.
;  3341     3465  5                        !
;  3342     3466  5                        IF .STATUS EQLU STS$K_SUCCESS
;  3343     3467  5                        THEN
;  3344     3468  5                            EXITLOOP;
;  3345     3469  5
;  3346     3470  5
```

```
;  3347          3471  5                     ! If the status is not a warning, something is
;  3348          3472  5                     ! wrong, so return with a failure.
;  3349          3473  5                     !
;  3350          3474  5                     IF .STATUS NEQU STS$K_WARNING
;  3351          3475  5                     THEN
;  3352          3476  5                         RETURN .STATUS;
;  3353          3477  5                     !
;  3354          3478  5                     END
;  3355          3479  4                 WHILE (MATCH (DBG$CS_COMMA));
;  3356          3480  4                 !
;  3357          3481  3             END;
;  3358          3482  3             !
;  3359          3483  2         END;
;  3360          3484  2         !
;  3361          3485  2     TES;
;  3362          3486  2     !
;  3363          3487  2     !
;  3364          3488  2     ! Check the status after parsing <address> [ , <address> ] or <mnemonic>
;  3365          3489  2     ! [ , <mnemonic> ].  If there's nothing left on the line, the status will
;  3366          3490  2     ! be success, and we can leave.  Otherwise we signal a syntax error.
;  3367          3491  2     !
;  3368          3492  2     IF .STATUS EQLU STS$K_SUCCESS THEN RETURN STS$K_SUCCESS;
;  3369          3493  2     .MESSAGE_VECT = DBG$NSYNTAX_ERROR (DBG$NNEXT_WORD (.INPUT_DESC));
;  3370          3494  2     RETURN STS$K_SEVERE
;  3371          3495  2     !
;  3372          3496  1     END;


                                                .PSECT  DBG$PLIT,NOWRT,  SHR,  PIC,0

                4E  4F  49  54  50  45  43  58  45  09  001A1 P.ABT:   .ASCII  <9>\EXCEPTION\                    ;
        4E  4F  49  54  43  55  52  54  53  4E  49  0B  001AB P.ABU:   .ASCII  <11>\INSTRUCTION\                ;
                                    4C  4C  41  43  04  001B7 P.ABV:   .ASCII  <4>\CALL\                       ;
                                4E  52  55  54  45  52  C6  001BC P.ABW:   .ASCII  <6>\RETURN\                     ;
                                48  43  4E  41  52  42  06  001C3 P.ABX:   .ASCII  <6>\BRANCH\                     ;
                                        45  4E  49  4C  04  001CA P.ABY:   .ASCII  <4>\LINE\                       ;
                                            4C  4C  41  03  001CF P.ABZ:   .ASCII  <3>\ALL\                        ;
                                                    2C  01  001D3 P.ACA:   .ASCII  <1>\,\                         ;
                                                    2F  01  001D5 P.ACB:   .ASCII  <1>\/\                         ;
                                                    0D  01  001D7 P.ACC:   .BYTE   1, 13                          ;

                                                DBG$CS_EXCEPTION=   P.ABT
                                                DBG$CS_INSTRUCTION= P.ABU
                                                DBG$CS_CALL=        P.ABV
                                                DBG$CS_RETURN=      P.ABW
                                                DBG$CS_BRANCH=      P.ABX
                                                DBG$CS_LINE=        P.ABY
                                                DBG$CS_ALL=         P.ABZ
                                                DBG$CS_COMMA=       P.ACA
                                                DBG$CS_SLASH=       P.ACB
                                                DBG$CS_CR=          P.ACC

                                                .PSECT  DBG$CODE,NOWRT,  SHR,  PIC,0

                                    0FFC 00000  .ENTRY  DBG$EVENT_SHOW_CANCEL_SYNTAX, Save R2,R3,-  ; 3186
```

```
                                                        R4,R5,R6,R7,R8,R9,R10,R11
5B 00000000G   00   9E 00002         MOVAB   DBG$GB_RADIX, R11
5A 00000000G   00   9E 00009         MOVAB   DBG$GET_TEMPMEM, R10
59 00000000'   EF   9E 00010         MOVAB   DBG$CS_CR, R9
58 00000000G   00   9E 00017         MOVAB   DBG$NMATCH, R8
57             01   D0 0001E         MOVL    #1, STATUS                              ;3265
50       08    AC   D0 00021         MOVL    VERB_NODE, R0                           ;3270
         04    A0   7C 00025         CLRQ    4(R0)
55       04    A0   9E 00028         MOVAB   4(R0), ADVERB_LINK                      ;3276
56       08    A0   9E 0002C         MOVAB   8(R0), NOUN_LINK                        ;3277
50       01    A0   9A 00030         MOVZBL  1(R0), R0                               ;3283
                 05   15 00034         BLEQ    1$                                      ;3290
02               50   91 00036         CMPB    R0, #2
                 0D   1B 00039         BLEQU   2$
09               50   91 0003B 1$:     CMPB    R0, #9
                 08   13 0003E         BEQL    2$
0B               50   91 00040         CMPB    R0, #11
                 03   13 00043         BEQL    2$
              00EF   31 00045         BRW     14$
                 01   DD 00048 2$:     PUSHL   #1                                      ;3308
            FE   A9   9F 0004A         PUSHAB  DBG$CS_SLASH
54       04    AC   D0 0004D         MOVL    INPUT_DESC, R4
               54   DD 00051         PUSHL   R4
68             03   FB 00053         CALLS   #3, DBG$NMATCH
03             50   E8 00056         BLBS    R0, 3$
              008C   31 00059         BRW     11$
                 03   DD 0005C 3$:     PUSHL   #3                                      ;3310
6A               01   FB 0005E         CALLS   #1, DBG$GET_TEMPMEM
52               50   D0 00061         MOVL    R0, ADVERB_NODE
         08    A2   D4 00064         CLRL    8(ADVERB_NODE)
65               52   D0 00067         MOVL    ADVERB_NODE, (ADVERB_LINK)
55       08    A2   9E 0006A         MOVAB   8(ADVERB_NODE), ADVERB_LINK
                 01   DD 0006E         PUSHL   #1                                      ;3326
            CA   A9   9F 00070         PUSHAB  DBG$CS_EXCEPTION
                 54   DD 00073         PUSHL   R4
68               03   FB 00075         CALLS   #3, DBG$NMATCH
01               50   D1 00078         CMPL    R0, #1
                 05   12 0007B         BNEQ    4$
62               0B   90 0007D         MOVB    #11, (ADVERB_NODE)                      ;3327
                 4E   11 00080         BRB     8$
                 01   DD 00082 4$:     PUSHL   #1                                      ;3333
            E0   A9   9F 00084         PUSHAB  DBG$CS_CALL
                 54   DD 00087         PUSHL   P4
68               03   FB 00089         CALLS   #3, DBG$NMATCH
01               50   D1 0008C         CMPL    R0, #1
                 05   12 0008F         BNEQ    5$
62               12   90 00091         MOVB    #18, (ADVERB_NODE)                      ;3334
                 3A   11 00094         BRB     8$
                 01   DD 00096 5$:     PUSHL   #1                                      ;3340
            EC   A9   9F 00098         PUSHAB  DBG$CS_BRANCH
                 54   DD 0009B         PUSHL   R4
68               03   FB 0009D         CALLS   #3, DBG$NMATCH
01               50   D1 000A0         CMPL    R0, #1
                 05   12 000A3         BNEQ    6$
62               13   90 000A5         MOVB    #19, (ADVERB_NODE)                      ;3341
                 26   11 000A8         BRB     8$
                 01   DD 000AA 6$:     PUSHL   #1                                      ;3347
```

```
                F3    A9  9F 000AC          PUSHAB  DBG$CS_LINE                                    ;
                      54  DD 000AF          PUSHL   R4                                             ;
            68        03  FB 000B1          CALLS   #3, DBG$NMATCH                                 ;
            01        50  D1 000B4          CMPL    R0, #1                                         ;
                      05  12 000B7          BNEQ    7$                                             ;
            62        14  90 000B9          MOVB    #20, (ADVERB_NODE)                             ; 3348
                      12  11 000BC          BRB     8$                                             ;
                      01  DD 000BE 7$:       PUSHL   #1                                             ; 3354
                D4    A9  9F 000C0          PUSHAB  DBG$CS_INSTRUCTION                             ;
                      54  DD 000C3          PUSHL   R4                                             ;
            68        03  FB 000C5          CALLS   #3, DBG$NMATCH                                 ;
            01        50  D1 000C8          CMPL    R0, #1                                         ;
                      06  12 000CB          BNEQ    9$                                             ;
            62        15  90 000CD          MOVB    #21, (ADVERB_NODE)                             ; 3355
                  010B  31 000D0 8$:       BRW     22$                                            ;
                      01  DD 000D3 9$:       PUSHL   #1                                             ; 3361
                F8    A9  9F 000D5          PUSHAB  DBG$CS_ALL                                     ;
                      54  DD 000D8          PUSHL   R4                                             ;
            68        03  FB 000DA          CALLS   #3, DBG$NMATCH                                 ;
            01        50  D1 000DD          CMPL    R0, #1                                         ;
                      03  13 000E0          BEQL    10$                                            ;
                  0087  31 000E2          BRW     15$                                            ;
                  00A3  31 000E5 10$:      BRW     17$                                            ;
                      01  DD 000E8 11$:      PUSHL   #1                                             ; 3385
              0210    8F  BB 000EA          PUSHR   #^M<R4,R9>                                     ;
            68        03  FB 000EE          CALLS   #3, DBG$NMATCH                                 ;
            DC        50  E8 000F1          BLBS    R0, 8$                                         ;
                      04  DD 000F4 12$:      PUSHL   #4                                             ; 3388
            6A        01  FB 000F6          CALLS   #1, DBG$GET_TEMPMEM                            ;
            53        50  D0 000F9          MOVL    R0, NOUN_NODE                                  ;
                08    A3  D4 000FC          CLRL    8(NOUN_NODE)                                   ;
            66        53  D0 000FF          MOVL    NOUN_NODE, (NOUN_LINK)                         ;
            56    08  A3  9E 00102          MOVAB   8(NOUN_NODE), NOUN_LINK                        ;
                0C    AC  DD 00106          PUSHL   MESSAGE_VECT                                   ; 3401
                      01  DD 00109          PUSHL   #1                                             ; 3399
            7E        6B  9A 0010B          MOVZBL  DBG$GB_RADIX, -(SP)                            ; 3400
                      53  DD 0010E          PUSHL   NOUN_NODE                                      ; 3399
                      54  DD 00110          PUSHL   R4                                             ;
00000000G   00            05  FB 00112          CALLS   #5, DBG$NPARSE_ADDRESS                         ;
            57            50  D0 00119          MOVL    R0, STATUS                                     ;
            01            57  D1 0011C          CMPL    STATUS, #1                                     ; 3407
                          AF  13 0011F          BEQL    8$                                             ;
                          57  D5 00121          TSTL    STATUS                                         ; 3415
                          03  13 00123          BEQL    13$                                            ;
                      00A5  31 00125          BRW     20$                                            ;
                          01  DD 00128 13$:      PUSHL   #1                                             ; 3419
                    FC    A9  9F 0012A          PUSHAB  DBG$CS_COMMA                                   ;
                          54  DD 0012D          PUSHL   R4                                             ;
            68            03  FB 0012F          CALLS   #3, DBG$NMATCH                                 ;
            9B            50  E9 00132          BLBC    R0, 8$                                         ;
                          BD  11 00135          BRB     12$                                            ;
            0E            50  91 00137 14$:      CMPB    R0, #14                                        ; 3428
                          94  12 0013A          BNEQ    8$                                             ;
                          01  DD 0013C          PUSHL   #1                                             ; 3430
                    FE    A9  9F 0013E          PUSHAB  DBG$CS_SLASH                                   ;
            54        04  AC  D0 00141          MOVL    INPUT_DESC, R4                                 ;
                          54  DD 00145          PUSHL   R4                                             ;
```

```
                68              03  FB 00147          CALLS   #3, DBG$NMATCH                                  ;
                43              50  E9 0014A          BLBC    R0, 18$                                         ;
                                03  DD 0014D          PUSHL   #3                                              ; 3432
                6A              01  FB 0014F          CALLS   #1, DBG$GET_TEMPMEM                             ;
                52              50  D0 00152          MOVL    R0, ADVERB_NODE                                 ;
                          08    A2  D4 00155          CLRL    8(ADVERB_NODE)                                  ;
                65              52  D0 00158          MOVL    ADVERB_NODE, (ADVERB_LINK)                      ;
                55        08    A2  9E 0015B          MOVAB   8(ADVERB_NODE), ADVERB_LINK                     ;
                                01  DD 0015F          PUSHL   #1                                              ; 3434
                          F8    A9  9F 00161          PUSHAB  DBG$CS_ALL                                      ;
                                54  DD 00164          PUSHL   R4                                              ;
                68              03  FB 00166          CALLS   #3, DBG$NMATCH                                  ;
                1F              50  E8 00169          BLBS    R0, 17$                                         ;
                                01  DD 0016C 15$:      PUSHL   #1                                              ;
                        0210    8F  BB 0016E          PUSHR   #^M<R4,R9>                                      ;
                68              03  FB 00172          CALLS   #3, DBG$NMATCH                                  ;
                0F              50  E9 00175          BLBC    R0, 16$                                         ;
                    000280D0    8F  DD 00178          PUSHL   #164048                                         ;
00000000G       00              01  FB 0017E          CALLS   #1, DBG$NMAKE_ARG_VECT                          ;
                                73  11 00185          BRB     25$                                             ;
                                54  DD 00187 16$:      PUSHL   R4                                              ;
                                5F  11 00189          BRB     24$                                             ;
                62              17  90 0018B 17$:      MOVB    #23, (ADVERB_NODE)                              ; 3435
                                4E  11 0018E          BRB     22$                                             ; 3430
                                01  DD 00190 18$:      PUSHL   #1                                              ; 3440
                        0210    8F  BB 00192          PUSHR   #^M<R4,R9>                                      ;
                68              03  FB 00196          CALLS   #3, DBG$NMATCH                                  ;
                42              50  E8 00199          BLBS    R0, 22$                                         ;
                                04  DD 0019C 19$:      PUSHL   #4                                              ; 3446
                6A              01  FB 0019E          CALLS   #1, DBG$GET_TEMPMEM                             ;
                53              50  D0 001A1          MOVL    R0, NOUN_NODE                                   ;
                          08    A3  D4 001A4          CLRL    8(NOUN_NODE)                                    ;
                66              53  D0 001A7          MOVL    NOUN_NODE, (NOUN_LINK)                          ;
                56        08    A3  9E 001AA          MOVAB   8(NOUN_NODE), NOUN_LINK                         ;
                          0C    AC  DD 001AE          PUSHL   MESSAGE_VECT                                    ; 3460
                                01  DD 001B1          PUSHL   #1                                              ; 3458
                7E              6B  9A 001B3          MOVZBL  DBG$GB_RADIX, -(SP)                             ; 3459
                                53  DD 001B6          PUSHL   NOUN_NODE                                       ; 3458
                                54  DD 001B8          PUSHL   R4                                              ;
00000000G       00              05  FB 001BA          CALLS   #5, DBG$NPARSE_ADDRESS                          ;
                57              50  D0 001C1          MOVL    R0, STATUS                                      ;
                01              57  D1 001C4          CMPL    STATUS, #1                                      ; 3466
                                15  13 001C7          BEQL    22$                                             ;
                                57  D5 001C9          TSTL    STATUS                                          ; 3474
                                04  13 001CB          BEQL    21$                                             ;
                50              57  D0 001CD 20$:      MOVL    STATUS, R0                                      ; 3476
                                04  001D0             RET                                                     ;
                                01  DD 001D1 21$:      PUSHL   #1                                              ; 3479
                          FC    A9  9F 001D3          PUSHAB  DBG$CS_COMMA                                    ;
                                54  DD 001D6          PUSHL   R4                                              ;
                68              03  FB 001D8          CALLS   #3, DBG$NMATCH                                  ;
                BE              50  E8 001DB          BLBS    R0, 19$                                         ;
                01              57  D1 001DE 22$:      CMPL    STATUS, #1                                      ; 3492
                                04  12 001E1          BNEQ    23$                                             ;
                50              01  D0 001E3          MOVL    #1, R0                                          ;
                                04  001E6             RET                                                     ;
                          04    AC  DD 001E7 23$:      PUSHL   INPUT_DESC                                      ; 3493
```

```
                 00000000G  00          01  FB 001EA 24$:    CALLS   #1, DBG$NNEXT_WORD                    ;
                                        50  DD 001F1         PUSHL   R0                                    ;
                 00000000G  00          01  FB 001F3         CALLS   #1, DBG$NSYNTAX_ERROR                 ;
                       0C   BC          50  D0 001FA 25$:    MOVL    R0, @MESSAGE_VECT                     ;
                            50          04  D0 001FE         MOVL    #4, R0                                ; 3494
                                            04 00201         RET                                           ; 3496

; Routine Size:  514 bytes,    Routine Base:  DBG$CODE + 13E6
```

```
;  3374          3497  1 GLOBAL ROUTINE DBG$EVENT_SHOW_CANCEL_SEMANTICS(VERB_NODE, MESSAGE_VECT) =
;  3375          3498  1 !
;  3376          3499  1 ! FUNCTION
;  3377          3500  1 !       This routine builds the event data stuctures based on the
;  3378          3501  1 !       parse tree passed via the VERB_NODE address.  This routine
;  3379          3502  1 !       is called from DBGNSET.
;  3380          3503  1 !
;  3381          3504  1 ! INPUTS
;  3382          3505  1 !       VERB_NODE:      A pointer to a DEBUG verb node, which defines,
;  3383          3506  1 !                       along with the verb's descendants, the desired
;  3384          3507  1 !                       command.
;  3385          3508  1 !       MESSAGE_VECT:   The address of a longword to contain the address
;  3386          3509  1 !                       of a message argument vector.
;  3387          3510  1 !
;  3388          3511  1 ! OUTPUTS
;  3389          3512  1 !       The event data structure(s) are updated to include the new event,
;  3390          3513  1 !       and may include:
;  3391          3514  1 !
;  3392          3515  1 !           EVENT$CMD_QUEUE,
;  3393          3516  1 !           EVENT$WHEN_QUEUE,
;  3394          3517  1 !           EVENT$DO_LIST_QUEUE
;  3395          3518  1 !
;  3396          3519  1
;  3397          3520  2     BEGIN
;  3398          3521  2
;  3399          3522  2     MAP
;  3400          3523  2         VERB_NODE: REF DBG$VERB_NODE;   ! Verb node pointer
;  3401          3524  2
;  3402          3525  2     MACRO
;  3403        M 3526  2         SHOW_OR_DELETE_EVENT_ENTRY (EVENT_ENTRY) =
;  3404        M 3527  2             BEGIN
;  3405        M 3528  2             IF .VERB_NODE [DBG$B_VERB_LITERAL] EQLU DBG$K_SHOW_VERB
;  3406        M 3529  2             THEN
;  3407        M 3530  2                 SHOW_EVENT_ENTRY (.EVENT_ENTRY)
;  3408        M 3531  2
;  3409        M 3532  2             ELSE
;  3410        M 3533  2                 EVENT_ENTRY [EVENT$V_DELETED] = TRUE;
;  3411        M 3534  2
;  3412        M 3535  2             SHOWED_CANCELED_ONE = TRUE;
;  3413        M 3536  2             END
;  3414          3537  2         %;
;  3415          3538  2
;  3416          3539  2     LOCAL
;  3417          3540  2         DUMMY,
;  3418          3541  2         EVENT_QUEUE: QUEUE_HEAD,                    ! Working queue head
;  3419          3542  2         QUEUE_ENTRY: REF EVENT$EVENT_DESCRIPTOR,    ! Event queue entry pointer
;  3420          3543  2         NEXTQ_ENTRY: REF EVENT$EVENT_DESCRIPTOR,    ! Event queue entry pointer
;  3421          3544  2         EVENT_ENTRY: REF EVENT$EVENT_DESCRIPTOR,    ! Event entry pointer
;  3422          3545  2         DO_ENTRY: REF EVENT$DO_LIST_DESCRIPTOR,     ! DO List entry pointer
;  3423          3546  2         WHEN_ENTRY: REF EVENT$WHEN_DESCRIPTOR,      ! WHEN entry pointer
;  3424          3547  2         ADVERB_NODE: REF DBG$ADVERB_NODE,           ! Adverb node link
;  3425          3548  2         NOUN_NODE: REF DBG$NOUN_NODE,               ! Noun node link
;  3426          3549  2         PRIMARY: REF DBG$PRIMARY,                   ! Event primary descriptor
;  3427          3550  2         VALUE: REF DBG$VALDESC,                     ! Event value descriptor
;  3428          3551  2         ADDRESS: VECTOR [2],                        ! Event address
;  3429          3552  2         ADR_TYP,                                    ! Event address type
;  3430          3553  2         SHOW_CANCEL_ALL,                            ! Show or Cancel all ?
```

```
;  3431          3554  2          SHOWED_CANCELED_ANY,                    ! Did we show/cancel any yet ?
;  3432          3555  2          SHOWED_CANCELED_ONE,                    ! Did we show/cancel one yet ?
;  3433          3556  2          COUNTER;                                ! Counter variable
;  3434          3557  2
;  3435          3558  2
;  3436          3559  2
;  3437          3560  2      ! Initialize the working queue to be empty.
;  3438          3561  2      !
;  3439          3562  2      EVENT_QUEUE [L_QUEUE_FLINK] = EVENT_QUEUE;
;  3440          3563  2      EVENT_QUEUE [L_QUEUE_BLINK] = EVENT_QUEUE;
;  3441          3564  2
;  3442          3565  2
;  3443          3566  2      ! Get an event descriptor from permanent memory, and
;  3444          3567  2      ! link it into the working queue.
;  3445          3568  2      !
;  3446          3569  2      EVENT_ENTRY = DBG$GET_MEMORY (EVENT$K_EVENT_DESCRIPTOR_SIZE);
;  3447          3570  2      INSQUE (.EVENT_ENTRY, EVENT_QUEUE);
;  3448          3571  2
;  3449          3572  2
;  3450          3573  2      ! Initialize the command kind to access (default).
;  3451          3574  2      !
;  3452          3575  2      EVENT_ENTRY [EVENT$B_CMD_KIND] = EVENT$K_KIND_ACC;
;  3453          3576  2
;  3454          3577  2
;  3455          3578  2      ! Set the event's command type, found in the verb.
;  3456          3579  2      !
;  3457          3580  2      SELECTONE .VERB_NODE [DBG$B_VERB_COMPOSITE] OF
;  3458          3581  2          SET
;  3459          3582  2
;  3460          3583  2          [EVENT$K_SHOW_BREAK, EVENT$K_CANCEL_BREAK]:
;  3461          3584  2              EVENT_ENTRY [EVENT$B_CMD_TYPE] = EVENT$K_TYPE_BREAK;
;  3462          3585  2
;  3463          3586  2          [EVENT$K_CANCEL_BREAK_EXC]:
;  3464          3587  3              BEGIN
;  3465          3588  3              EVENT_ENTRY [EVENT$B_CMD_TYPE] = EVENT$K_TYPE_BREAK;
;  3466          3589  3              EVENT_ENTRY [EVENT$B_CMD_KIND] = EVENT$K_KIND_EXC;
;  3467          3590  2              END;
;  3468          3591  2
;  3469          3592  2          [EVENT$K_SHOW_TRACE, EVENT$K_CANCEL_TRACE]:
;  3470          3593  2              EVENT_ENTRY [EVENT$B_CMD_TYPE] = EVENT$K_TYPE_TRACE;
;  3471          3594  2
;  3472          3595  2          [EVENT$K_SHOW_WATCH, EVENT$K_CANCEL_WATCH]:
;  3473          3596  2              EVENT_ENTRY [EVENT$B_CMD_TYPE] = EVENT$K_TYPE_WATCH;
;  3474          3597  2
;  3475          3598  2          [OTHERWISE]:
;  3476          3599  2              $DBG_ERROR('DBGEVENT\EVENT_SHOW_CANCEL_SEMANTICS 10');
;  3477          3600  2
;  3478          3601  2          TES;
;  3479          3602  2
;  3480          3603  2
;  3481          3604  2      ! Initialize Has Value Descriptor flag.
;  3482          3605  2      !
;  3483          3606  2      EVENT_ENTRY [EVENT$V_HAS_VAL_DSCR] = FALSE;
;  3484          3607  2
;  3485          3608  2
;  3486          3609  2      ! Initialize the Primary pointer to NULL.
;  3487          3610  2      !
```

```
;  3488          3611  2     EVENT_ENTRY [EVENT$L_PRIMARY] = 0;
;  3489          3612  2
;  3490          3613  2
;  3491          3614  2     ! Point to the verb's noun list.
;  3492          3615  2     !
;  3493          3616  2     NOUN_NODE = .VERB_NODE [DBG$L_VERB_OBJECT_PTR];
;  3494          3617  2
;  3495          3618  2
;  3496          3619  2     ! Point to the verb's adverb list.
;  3497          3620  2     !
;  3498          3621  2     ADVERB_NODE = .VERB_NODE [DBG$L_VERB_ADVERB_PTR];
;  3499          3622  2
;  3500          3623  2
;  3501          3624  2     ! Initialize the All flag.
;  3502          3625  2     !
;  3503          3626  2     SHOW_CANCEL_ALL = FALSE;
;  3504          3627  2
;  3505          3628  2
;  3506          3629  2     ! If an adverb exists, process it.
;  3507          3630  2     !
;  3508          3631  2     IF .ADVERB_NODE NEQA 0
;  3509          3632  2     THEN
;  3510          3633  3         BEGIN
;  3511          3634  3
;  3512          3635  3
;  3513          3636  3         ! Process adverbs based on the literal set by the
;  3514          3637  3         ! syntactic processing.
;  3515          3638  3         !
;  3516          3639  3         SELECTONE .ADVERB_NODE [DBG$B_ADVERB_LITERAL] OF
;  3517          3640  3             SET
;  3518          3641  3
;  3519          3642  3
;  3520          3643  3             ! Process the /EXCEPTION adverb.
;  3521          3644  3             !
;  3522          3645  3             [ADVERB_EXCEPTION]:
;  3523          3646  3                     EVENT_ENTRY [EVENT$B_CMD_KIND] = EVENT$K_KIND_EXC;
;  3524          3647  3
;  3525          3648  3
;  3526          3649  3             ! Process the /CALL, /RETURN, /BRANCH, /LINE, /OPCODE
;  3527          3650  3             ! and /INSTRUCTION instruction-kind adverbs.
;  3528          3651  3             !
;  3529          3652  3             [ADVERB_CALL, ADVERB_RETURN, ADVERB_BRANCH,
;  3530          3653  3              ADVERB_LINE, ADVERB_OPCODE, ADVERB_INSTRUCTION]:
;  3531          3654  4                 BEGIN
;  3532          3655  4
;  3533          3656  4
;  3534          3657  4                 ! Define the event kind to be instruction.
;  3535          3658  4                 !
;  3536          3659  4                 EVENT_ENTRY [EVENT$B_CMD_KIND] = EVENT$K_KIND_INS;
;  3537          3660  4
;  3538          3661  4
;  3539          3662  4                 ! Define the subkind according to the adverb.
;  3540          3663  4                 !
;  3541          3664  4                 EVENT_ENTRY [EVENT$B_SUB_KIND] =
;  3542          3665  5                     (SELECTONE .ADVERB_NODE [DBG$B_ADVERB_LITERAL] OF
;  3543          3666  5                         SET
;  3544          3667  5                         [ADVERB_CALL]:
```

```
;  3545          3668  5                          EVENT$K_INS_CALL;
;  3546          3669  5                      [ADVERB_BRANCH]:
;  3547          3670  5                          EVENT$K_INS_BRAN·
;  3548          3671  5                      [ADVERB_LINE]:
;  3549          3672  5                          EVENT$K_INS_LINE;
;  3550          3673  5                      [ADVERB_OPCODE]:
;  3551          3674  5                          EVENT$K_INS_USER;
;  3552          3675  5                      [ADVERB_INSTRUCTION]:
;  3553          3676  5                          EVENT$K_INS_EVRY;
;  3554          3677  5                      [OTHERWISE]:
;  3555          3678  5                          $DBG_ERROR('DBGEVENT\EVENT_SHOW_CANCEL_SEMANTICS 20');
;  3556          3679  5                      TES
;  3557          3680  5                  )
;  3558          3681  3              END;
;  3559          3682  3
;  3560          3683  3
;  3561          3684  3              ! Process the /ALL adverb.
;  3562          3685  3              !
;  3563          3686  3              [ADVERB_ALL]:
;  3564          3687  3                  SHOW_CANCEL_ALL = TRUE;
;  3565          3688  3
;  3566          3689  3
;  3567          3690  3              ! An invalid adverb literal - yell !
;  3568          3691  3              !
;  3569          3692  3              [OTHERWISE]:
;  3570          3693  3                  $DBG_ERROR('DBGEVENT\EVENT_SHOW_CANCEL_SEMANTICS 30');
;  3571          3694  3
;  3572          3695  3              TES;
;  3573          3696  3
;  3574          3697  2          END;
;  3575          3698  2
;  3576          3699  2
;  3577          3700  2          ! If there are no noun nodes, set the All flag if this is a
;  3578          3701  2          ! SHOW command.  Otherwise, make sure the command kind is
;  3579          3702  2          ! (still) access, and process the address(es).
;  3580          3703  2          !
;  3581          3704  2          IF .NOUN_NODE EQLA 0
;  3582          3705  2          THEN
;  3583          3706  3              BEGIN
;  3584          3707  3              IF .VERB_NODE [DBG$B_VERB_LITERAL] EQLU DBG$K_SHOW_VERB
;  3585          3708  3              THEN
;  3586          3709  3                  SHOW_CANCEL_ALL = TRUE;
;  3587          3710  3
;  3588          3711  3              END
;  3589          3712  3
;  3590          3713  2          ELSE
;  3591          3714  3              BEGIN
;  3592          3715  3
;  3593          3716  3
;  3594          3717  3              ! Build duplicate event entries, one for each
;  3595          3718  3              ! address found in the noun node list.
;  3596          3719  3              !
;  3597          3720  3              WHILE TRUE DO
;  3598          3721  4                  BEGIN
;  3599          3722  4
;  3600          3723  4
;  3601          3724  4                  ! Using the address's primary descriptor, get the address.
```

```
;  3602          3725  4          !
;  3603          3726  4          PRIMARY = .NOUN_NODE [DBG$L_NOUN_VALUE];
;  3604          3727  4          EVENT_ENTRY [EVENT$V_BREAK_ADDRESS] = FALSE;
;  3605          3728  4          IF .EVENT_ENTRY [EVENT$B_CMD_TYPE] EQL EVENT$K_TYPE_BREAK OR
;  3606          3729  4             .EVENT_ENTRY [EVENT$B_CMD_TYPE] EQL EVENT$K_TYPE_TRACE
;  3607          3730  4          THEN
;  3608          3731  5              BEGIN
;  3609          3732  5              IF .PRIMARY[DBG$B_DHDR_TYPE] EQL DBG$K_PRIMARY_DESC
;  3610          3733  5              THEN
;  3611          3734  6                  BEGIN
;  3612          3735  6                  IF .PRIMARY[DBG$B_DHDR_KIND] EQL RST$K_ROUTINE OR
;  3613          3736  6                     .PRIMARY[DBG$B_DHDR_KIND] EQL RST$K_ENTRY
;  3614          3737  6                  THEN
;  3615          3738  6                      EVENT_ENTRY [EVENT$V_BREAK_ADDRESS] = TRUE;
;  3616          3739  6
;  3617          3740  5                  END;
;  3618          3741  5
;  3619          3742  4              END;
;  3620          3743  4
;  3621          3744  4          IF NOT DBG$NGET_ADDRESS(.PRIMARY, ADDRESS[0], ADR_TYP,
;  3622          3745  5                   (IF .EVENT_ENTRY [EVENT$V_BREAK_ADDRESS]
;  3623          3746  5                    THEN
;  3624          3747  5                       TRUE
;  3625          3748  5                    ELSE
;  3626          3749  4                       FALSE),
;  3627          3750  4                   .MESSAGE_VECT)
;  3628          3751  4          THEN
;  3629          3752  4              RETURN STS$K_SEVERE;
;  3630          3753  4
;  3631          3754  4
;  3632          3755  4          EVENT_ENTRY [EVENT$L_ADDRESS] = .ADDRESS[0];
;  3633          3756  4          IF NOT .EVENT_ENTRY [EVENT$V_BREAK_ADDRESS]
;  3634          3757  4          THEN
;  3635          3758  5              BEGIN
;  3636          3759  5              IF DBG$IS_IT_ENTRY (.ADDRESS [0])
;  3637          3760  5              THEN
;  3638          3761  5                  EVENT_ENTRY [EVENT$L_ADDRESS] = .ADDRESS[0] + 2;
;  3639          3762  5
;  3640          3763  4              END;
;  3641          3764  4
;  3642          3765  4
;  3643          3766  4          ! Save the event's primary.
;  3644          3767  4          !
;  3645          3768  4          EVENT_ENTRY [EVENT$L_PRIMARY] = .NOUN_NODE [DBG$L_NOUN_VALUE];
;  3646          3769  4          DBG$NCOPY_DESC(.EVENT_ENTRY [EVENT$L_PRIMARY], PRIMARY, DUMMY, FALSE);
;  3647          3770  4
;  3648          3771  4
;  3649          3772  4          ! Now, get and save the VMS descriptor.
;  3650          3773  4          !
;  3651          3774  4          DBG$PRIM_TO_VAL(.PRIMARY, DBG$K_V_VALUE_DESC, VALUE);
;  3652          3775  4          CH$MOVE(T2, VALUE[DBG$A_VALUE_VMSDESC],
;  3653          3776  4                                  EVENT_ENTRY[EVENT$A_VMSDESC]);
;  3654          3777  4
;  3655          3778  4
;  3656          3779  4          ! Point to the next noun node.
;  3657          3780  4          !
;  3658          3781  4          NOUN_NODE = .NOUN_NODE[DBG$L_NOUN_LINK];
```

```
;  3659          3782  4
;  3660          3783  4
;  3661          3784  4              ! If there's more addresses, get an new event descriptor
;  3662          3785  4              ! from permanent memory, copy the current one to it, and
;  3663          3786  4              ! link it to the working queue; otherwise, exit this loop.
;  3664          3787  4              !
;  3665          3788  4              IF .NOUN_NODE NEQA 0
;  3666          3789  4              THEN
;  3667          3790  5                  BEGIN
;  3668          3791  5
;  3669          3792  5
;  3670          3793  5                  ! Get another event descriptor, and copy the old
;  3671          3794  5                  ! one into it.
;  3672          3795  5                  !
;  3673          3796  5                  EVENT_ENTRY = DBG$GET_MEMORY(EVENT$K_EVENT_DESCRIPTOR_SIZE);
;  3674          3797  5                  CH$MOVE(EVENT$K_EVENT_DESCRIPTOR_SIZE * 4,
;  3675          3798  5                          .EVENT_QUEUE [L_QUEUE_FLINK], .EVENT_ENTRY);
;  3676          3799  5
;  3677          3800  5
;  3678          3801  5                  ! Link the new one into the working queue.
;  3679          3802  5                  !
;  3680          3803  5                  INSQUE (.EVENT_ENTRY, EVENT_QUEUE);
;  3681          3804  5                  END
;  3682          3805  5
;  3683          3806  4              ELSE
;  3684          3807  4                  EXITLOOP;
;  3685          3808  4
;  3686          3809  4              END
;  3687          3810  4
;  3688          3811  2          END;
;  3689          3812  2
;  3690          3813  2
;  3691          3814  2          ! Now that we've built a working list of event entries, compare them to
;  3692          3815  2          ! the Command Queue, showing or deleting existing entries that match new
;  3693          3816  2          ! ones.
;  3694          3817  2          !
;  3695          3818  2          ! For each new event entry, check the existing entries in the
;  3696          3819  2          ! Command queue for any entries that match (command types, and
;  3697          3820  2          ! addresses if the command type is an access type).
;  3698          3821  2          !
;  3699          3822  2          ! So, while there are (still) entries on the working queue....
;  3700          3823  2          !
;  3701          3824  2          SHOWED_CANCELED_ANY = FALSE;
;  3702          3825  2          WHILE .EVENT_QUEUE [L_QUEUE_FLINK] NEQA EVENT_QUEUE DO
;  3703          3826  3              BEGIN
;  3704          3827  3
;  3705          3828  3
;  3706          3829  3              ! Point EVENT_ENTRY to the first new event entry or the
;  3707          3830  3              ! working queue.
;  3708          3831  3              !
;  3709          3832  3              EVENT_ENTRY = .EVENT_QUEUE [L_QUEUE_FLINK];
;  3710          3833  3
;  3711          3834  3
;  3712          3835  3              ! Point to the first and next existing entries in the Command Queue.
;  3713          3836  3              !
;  3714          3837  3              QUEUE_ENTRY = .EVENT$CMD_QUEUE [L_QUEUE_FLINK];
;  3715          3838  3
```

```
;  3716          3839  3
;  3717          3840  3          ! For each existing entry...
;  3718          3841  3          !
;  3719          3842  3          SHOWED_CANCELED_ONE = FALSE;
;  3720          3843  3          WHILE .QUEUE_ENTRY NEQA EVENT$CMD_QUEUE DO
;  3721          3844  4              BEGIN
;  3722          3845  4
;  3723          3846  4
;  3724          3847  4              ! Ignore 'deleted' entries that haven't been removed.
;  3725          3848  4              !
;  3726          3849  4              IF NOT .QUEUE_ENTRY [EVENT$V_DELETED]
;  3727          3850  4              THEN
;  3728          3851  5                  BEGIN
;  3729          3852  5
;  3730          3853  5
;  3731          3854  5                  ! Compare the command type with the existing one.
;  3732          3855  5                  !
;  3733          3856  5                  IF .EVENT_ENTRY [EVENT$B_CMD_TYPE] EQLU
;  3734          3857  5                     .QUEUE_ENTRY [EVENT$B_CMD_TYPE]
;  3735          3858  5                  THEN
;  3736          3859  6                      BEGIN
;  3737          3860  6
;  3738          3861  6
;  3739          3862  6                      ! We found an existing entry of the right type, so
;  3740          3863  6                      ! there is/are BREAK(s), TRACE(s), or WATCH(es) to
;  3741          3864  6                      ! be checked.
;  3742          3865  6                      !
;  3743          3866  6                      SHOWED_CANCELED_ANY = TRUE;
;  3744          3867  6
;  3745          3868  6
;  3746          3869  6                      ! If the /ALL qualifier was used, the show or delete
;  3747          3870  6                      ! this entry.  Otherwise, we've got more checking to
;  3748          3871  6                      ! do....
;  3749          3872  6                      !
;  3750          3873  6                      IF .SHOW_CANCEL_ALL
;  3751          3874  6                      THEN
;  3752          3875  7                          SHOW_OR_DELETE_EVENT_ENTRY (QUEUE_ENTRY)
;  3753          3876  7
;  3754          3877  6                      ELSE
;  3755          3878  7                          BEGIN
;  3756          3879  7
;  3757          3880  7
;  3758          3881  7                          ! Compare the command kind of this existing entry
;  3759          3882  7                          ! and the new one.
;  3760          3883  7                          !
;  3761          3884  7                          IF .EVENT_ENTRY [EVENT$B_CMD_KIND] EQLU
;  3762          3885  7                             .QUEUE_ENTRY [EVENT$B_CMD_KIND]
;  3763          3886  7                          THEN
;  3764          3887  8                              BEGIN
;  3765          3888  8
;  3766          3889  8
;  3767          3890  8                              ! The command kinds match.  Select on the kind.
;  3768          3891  8                              !
;  3769          3892  8                              SELECTONE .EVENT_ENTRY [EVENT$B_CMD_KIND] OF
;  3770          3893  8                                  SET
;  3771          3894  8
;  3772          3895  8
```

```
;  3773          3896  8                    ! The command kind is access (/READ, /WRITE,
;  3774          3897  8                    ! /MODIFY, /EXECUTE, or /RETURN).  We now have
;  3775          3898  8                    ! to compare the addresses of the entries to
;  3776          3899  8                    ! determine if this existing one must be deleted.
;  3777          3900  8                    !
;  3778          3901  8                    [EVENT$K_KIND_ACC]:
;  3779          3902  9                        BEGIN
;  3780          3903  9                        LOCAL CODE_1,CODE_2;
;  3781          3904  9
;  3782          3905  9                        ! If either of the entries is /EXECUTE or
;  3783          3906  9                        ! /RETURN, we'll compare the byte addresses,
;  3784          3907  9                        ! otherwise compare the two VMS descriptors,
;  3785          3908  9                        ! and delete the exisiting entry if they're
;  3786          3909  9                        ! the same.
;  3787          3910  9                        !
;  3788          3911  9                        CODE_1 = .EVENT_ENTRY [EVENT$B_SUB_KIND];
;  3789          3912  9                        CODE_2 = .QUEUE_ENTRY [EVENT$B_SUB_KIND];
;  3790          3913 11                        IF (IF (.CODE_1 EQLU EVENT$K_ACC_EXEC)
;  3791          3914 11                            OR (.CODE_1 EQLU EVENT$K_ACC_RTRN)
;  3792          3915 11                            OR (.CODE_2 EQLU EVENT$K_ACC_EXEC)
;  3793          3916 11                            OR (.CODE_2 EQLU EVENT$K_ACC_RTRN)
;  3794          3917 10                            THEN
;  3795          3918 10                                .EVENT_ENTRY [EVENT$L_ADDRESS] EQLA
;  3796          3919 10                                .QUEUE_ENTRY [EVENT$L_ADDRESS]
;  3797          3920 10                            ELSE
;  3798          3921 10                                COMPARE_VMSDESC(EVENT_ENTRY [EVENT$A_VMSDESC],
;  3799          3922 10                                                QUEUE_ENTRY [EVENT$A_VMSDESC])
;  3800          3923 10                        )
;  3801          3924  9                    THEN
;  3802          3925  9                        SHOW_OR_DELETE_EVENT_ENTRY (QUEUE_ENTRY);
;  3803          3926  8                    END;
;  3804          3927  8
;  3805          3928  8
;  3806          3929  8                    ! The command kind is instruction.  Compare the two
;  3807          3930  8                    ! entries' subkind, and delete the existing entry if
;  3808          3931  8                    ! they're the same.
;  3809          3932  8                    !
;  3810          3933  8                    [EVENT$K_KIND_INS]:
;  3811          3934  8                        CASE .EVENT_ENTRY [EVENT$B_SUB_KIND]
;  3812          3935  8                        FROM EVENT$K_INS_CALL TO EVENT$K_INS_USER OF
;  3813          3936  8                            SET
;  3814          3937  8                            [EVENT$K_INS_CALL TO EVENT$K_INS_LINE]:
;  3815          3938  9                                BEGIN
;  3816          3939  9                                IF .EVENT_ENTRY [EVENT$B_SUB_KIND] EQLU
;  3817          3940  9                                   .QUEUE_ENTRY [EVENT$B_SUB_KIND]
;  3818          3941  9                                THEN
;  3819          3942  9                                    SHOW_OR_DELETE_EVENT_ENTRY (QUEUE_ENTRY);
;  3820          3943  8                                END;
;  3821          3944  8                            [EVENT$K_INS_EVRY TO EVENT$K_INS_USER]:
;  3822          3945  9                                BEGIN
;  3823          3946 10                                IF (.QUEUE_ENTRY [EVENT$B_SUB_KIND] EQLU
;  3824          3947  9                                    EVENT$K_INS_EVRY) OR
;  3825          3948 10                                   (.QUEUE_ENTRY [EVENT$B_SUB_KIND] EQLU
;  3826          3949 10                                    EVENT$K_INS_USER)
;  3827          3950  9                                THEN
;  3828          3951  9                                    SHOW_OR_DELETE_EVENT_ENTRY (QUEUE_ENTRY);
;  3829          3952  8                                END;
```

```
;  3830          3953  8                                TES;
;  3831          3954  8
;  3832          3955  8
;  3833          3956  8                            ! The access type is exception, so delete the existing
;  3834          3957  8                            ! entry.
;  3835          3958  8                            !
;  3836          3959  8                            [EVENT$K_KIND_EXC]:
;  3837          3960  8                                SHOW_OR_DELETE_EVENT_ENTRY (QUEUE_ENTRY);
;  3838          3961  8
;  3839          3962  8
;  3840          3963  8                            ! The command kind is invalid - yell !
;  3841          3964  8                            !
;  3842          3965  8                            [OTHERWISE]:
;  3843          3966  8                                $DBG_ERROR('DBGEVENT\EVENT_SHOW_CANCEL_SEMANTICS 40');
;  3844          3967  8
;  3845          3968  8                            TES;
;  3846          3969  8
;  3847          3970  7                        END;
;  3848          3971  7
;  3849          3972  6                    END;
;  3850          3973  6
;  3851          3974  5                END;
;  3852          3975  5
;  3853          3976  4            END;
;  3854          3977  4
;  3855          3978  4        ! Point to the next Command Queue entries.
;  3856          3979  4        !
;  3857          3980  4        QUEUE_ENTRY = .QUEUE_ENTRY [EVENT$L_CMD_FLINK];
;  3858          3981  4        END;
;  3859          3982  3
;  3860          3983  3
;  3861          3984  3    ! If this entry wasn't shown or cancelled, announce the fact, but we
;  3862          3985  3    ! did find one of this type, say we couldn't find this one.
;  3863          3986  3    !
;  3864          3987  3    IF NOT .SHOWED_CANCELED_ONE AND .SHOWED_CANCELED_ANY
;  3865          3988  3    THEN
;  3866          3989  3        SIGNAL      (SELECTONE .VERB_NODE [DBG$B_VERB_COMPOSITE] OF
;  3867          3990  3                        SET
;  3868          3991  3                        [EVENT$K_SHOW_BREAK, EVENT$K_CANCEL_BREAK,
;  3869          3992  3                         EVENT$K_CANCEL_BREAK_EXC]:
;  3870          3993  3                            DBG$_NOSUCHBPT;
;  3871          3994  3                        [EVENT$K_SHOW_TRACE, EVENT$K_CANCEL_TRACE]:
;  3872          3995  3                            DBG$_NOSUCHTPT;
;  3873          3996  3                        [EVENT$K_SHOW_WATCH, EVENT$K_CANCEL_WATCH]:
;  3874          3997  3                            DBG$_NOSUCHWPT;
;  3875          3998  3                        TES
;  3876          3999  3                    );
;  3877          4000  3
;  3878          4001  3
;  3879          4002  3    ! Remove this new entry from the working queue.
;  3880          4003  3    !
;  3881          4004  3    REMQUE (.EVENT_ENTRY, EVENT_ENTRY);
;  3882          4005  3    DBG$REL_MEMORY (.EVENT_ENTRY);
;  3883          4006  3    END;
;  3884          4007  2
;  3885          4008  2
;  3886          4009  2
```

```
;  3887          4010  2     ! If we couldn't find an entry of the right type, announce the fact.
;  3888          4011  2     !
;  3889          4012  2     IF NOT .SHOWED_CANCELED_ANY
;  3890          4013  2     THEN
;  3891          4014  2         SIGNAL   (SELECTONE .VERB_NODE [DBG$B_VERB_COMPOSITE] OF
;  3892          4015  2                       SET
;  3893          4016  2                       [EVENT$K_SHOW_BREAK, EVENT$K_CANCEL_BREAK,
;  3894          4017  2                        EVENT$K_CANCEL_BREAK_EXC]:
;  3895          4018  2                          DBG$_NOBREAKS;
;  3896          4019  2                       [EVENT$K_SHOW_TRACE, EVENT$K_CANCEL_TRACE]:
;  3897          4020  2                          DBG$_NOTRACES;
;  3898          4021  2                       [EVENT$K_SHOW_WATCH, EVENT$K_CANCEL_WATCH]:
;  3899          4022  2                          DBG$_NOWATCHES;
;  3900          4023  2                       TES
;  3901          4024  2                      );
;  3902          4025  2
;  3903          4026  2
;  3904          4027  2     ! We're done, bye.
;  3905          4028  2     !
;  3906          4029  2     RETURN STS$K_SUCCESS;
;  3907          4030  1     END;


                                                                .PSECT  DBG$PLIT,NOWRT,  SHR,  PIC,0

54 4E 45 56 45 5C 54 4E 45 56 45 47 42 44 27  001D9 P.ACD:  .ASCII  \'DBGEVENT\<92>\EVENT_SHOW_CANCEL_SEMANT\   ;
45 53 5F 4C 45 43 4E 41 43 5F 57 4F 48 53 5F  001E8                                                           ;
                                 54 4E 41 4D  001F7                                                           ;
                        30 31 20 53 43 49     001FB          .ASCII  \ICS 10\                                ;
54 4E 45 56 45 5C 54 4E 45 56 45 47 42 44 27  00201 P.ACE:  .ASCII  \'DBGEVENT\<92>\EVENT_SHOW_CANCEL_SEMANT\   ;
45 53 5F 4C 45 43 4E 41 43 5F 57 4F 48 53 5F  00210                                                           ;
                                 54 4E 41 4D  0021F                                                           ;
                        30 32 20 53 43 49     00223          .ASCII  \ICS 20\                                ;
54 4E 45 56 45 5C 54 4E 45 56 45 47 42 44 27  00229 P.ACF:  .ASCII  \'DBGEVENT\<92>\EVENT_SHOW_CANCEL_SEMANT\   ;
45 53 5F 4C 45 43 4E 41 43 5F 57 4F 48 53 5F  00238                                                           ;
                                 54 4E 41 4D  00247                                                           ;
                        30 33 20 53 43 49     0024B          .ASCII  \ICS 30\                                ;
54 4E 45 56 45 5C 54 4E 45 56 45 47 42 44 27  00251 P.ACG:  .ASCII  \'DBGEVENT\<92>\EVENT_SHOW_CANCEL_SEMANT\   ;
45 53 5F 4C 45 43 4E 41 43 5F 57 4F 48 53 5F  00260                                                           ;
                                 54 4E 41 4D  0026F                                                           ;
                        30 34 20 53 43 49     00273          .ASCII  \ICS 40\                                ;


                                                                .PSECT  DBG$CODE,NOWRT,  SHR,  PIC,0

                                                00FFC 00000             .ENTRY  DBG$EVENT_SHOW_CANCEL_SEMANTICS, Save R2,-  ; 3497
                                                                                R3,R4,R5,R6,R7,R8,R9,R10,R11                ;
                                 5B 00000000'   EF  9E 00002            MOVAB   EVENT$CMD_QUEUE, R11                        ;
                                 5A 00000000'   EF  9E 00009            MOVAB   P.ACD, R10                                  ;
                                 59 00000000G   00  9E 00010            MOVAB   LIB$SIGNAL, R9                              ;
                                 5E             28  C2 00017            SUBL2   #40, SP                                     ;
                           18    AE       18    AE  9E 0001A            MOVAB   EVENT_QUEUE, EVENT_QUEUE                    ; 3562
                           1C    AE       18    AE  9E 0001F            MOVAB   EVENT_QUEUE, EVENT_QUEUE+4                  ; 3563
                                                10  DD 00024             USHL    #16                                         ; 3569
                     00000000G   00             01  FB 00026            CALLS   #1, DBG$GET_MEMORY                          ;
```

```
                56              50  D0 0002D            MOVL    R0, EVENT_ENTRY
            18  AE              66  0E 00030            INSQUE  (EVENT_ENTRY), EVENT_QUEUE          ; 3570
                53        14    A6  9E 00034            MOVAB   20(EVENT_ENTRY), R3                 ; 3575
                          01    A3  94 00038            CLRB    1(R3)
                52        04    AC  D0 0003B            MOVL    VERB_NODE, R2                       ; 3580
                50        01    A2  9A 0003F            MOVZBL  1(R2), R0
                                09  15 00043            BLEQ    1$                                  ; 3583
                02              50  91 00045            CMPB    R0, #2
                                04  1A 00048            BGTRU   1$
                                63  94 0004A            CLRB    (R3)                                ; 3584
                                32  11 0004C            BRB     6$
                04              50  91 0004E 1$:        CMPB    R0, #4                              ; 3586
                                07  12 00051            BNEQ    2$
                63        0200  8F  B0 00053            MOVW    #512, (R3)                          ; 3588
                                26  11 00058            BRB     6$                                  ; 3580
                09              50  91 0005A 2$:        CMPB    R0, #9                              ; 3592
                                05  13 0005D            BEQL    3$
                0B              50  91 0005F            CMPB    R0, #11
                                05  12 00062            BNEQ    4$
                63              01  90 00064 3$:        MOVB    #1, (R3)                            ; 3593
                                17  11 00067            BRB     6$
                0E              50  91 00069 4$:        CMPB    R0, #14                             ; 3595
                                05  12 0006C            BNEQ    5$
                63              02  90 0006E            MOVB    #2, (R3)                            ; 3596
                                0D  11 00071            BRB     6$
                                5A  DD 00073 5$:        PUSHL   R10                                 ; 3599
                                01  DD 00075            PUSHL   #1
                      00028362  8F  DD 00077            PUSHL   #164706
                69              03  FB 0007D            CALLS   #3, LIB$SIGNAL
            03  A3              08  8A 00080 6$:        BICB2   #8, 3(R3)                           ; 3606
                          28    A6  D4 00084            CLRL    40(EVENT_ENTRY)                     ; 3611
                57        08    A2  D0 00087            MOVL    8(R2), NOUN_NODE                    ; 3616
                50        04    A2  D0 0008B            MOVL    4(R2), ADVERB_NODE                  ; 3621
                                58  D4 0008F            CLRL    SHOW_CANCEL_ALL                     ; 3626
                                50  D5 00091            TSTL    ADVERB_NODE                         ; 3631
                                7C  13 00093            BEQL    17$
                0B              60  91 00095            CMPB    (ADVERB_NODE), #11                  ; 3645
                                06  12 00098            BNEQ    7$
            01  A3              02  90 0009A            MOVB    #2, 1(R3)                           ; 3646
                                71  11 0009E            BRB     17$
                0A              60  91 000A0 7$:        CMPB    (ADVERB_NODE), #10                  ; 3652
                                0A  13 000A3            BEQL    8$
                12              60  91 000A5            CMPB    (ADVERB_NODE), #18
                                4F  1F 000A8            BLSSU   15$
                16              60  91 000AA            CMPB    (ADVERB_NODE), #22
                                4A  1A 000AD            BGTRU   15$
            01  A3              01  90 000AF 8$:        MOVB    #1, 1(R3)                           ; 3659
                12              60  91 000B3            CMPB    (ADVERB_NODE), #18                  ; 3667
                                05  12 000B6            BNEQ    9$
                50              05  D0 000B8            MOVL    #5, R0
                                36  11 000BB            BRB     14$
                13              60  91 000BD 9$:        CMPB    (ADVERB_NODE), #19                  ; 3669
                                05  12 000C0            BNEQ    10$
                50              06  D0 000C2            MOVL    #6, R0
                                2C  11 000C5            BRB     14$
                14              60  91 000C7 10$:       CMPB    (ADVERB_NODE), #20                  ; 3671
                                05  12 000CA            BNEQ    11$
```

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                50            07  D0 000CC          MOVL    #7, R0                                  ;
                              22  11 000CF          BRB     14$                                     ;
                16            60  91 000D1 11$:     CMPB    (ADVERB_NODE), #22                      ; 3673
                              05  12 000D4          BNEQ    12$                                     ;
                50            09  D0 000D6          MOVL    #9, R0                                  ;
                              18  11 000D9          BRB     14$                                     ;
                15            60  91 000DB 12$:     CMPB    (ADVERB_NODE), #21                      ; 3675
                              05  12 000DE          BNEQ    13$                                     ;
                50            08  D0 000E0          MOVL    #8, R0                                  ;
                              0E  11 000E3          BRB     14$                                     ;
                        28    AA  9F 000E5 13$:     PUSHAB  P.ACE                                   ; 3678
                              01  DD 000E8          PUSHL   #1                                      ;
                00028362      8F  DD 000EA          PUSHL   #164706                                 ;
                69            03  FB 000F0          CALLS   #3, LIB$SIGNAL                          ;
            02  A3            50  90 000F3 14$:     MOVB    R0, 2(R3)                               ; 3665
                              18  11 000F7          BRB     17$                                     ; 3664
                17            60  91 000F9 15$:     CMPB    (ADVERB_NODE), #23                      ; 3686
                              05  12 000FC          BNEQ    16$                                     ;
                58            01  D0 000FE          MOVL    #1, SHOW_CANCEL_ALL                     ; 3687
                              0E  11 00101          BRB     17$                                     ;
                        50    AA  9F 00103 16$:     PUSHAB  P.ACF                                   ; 3693
                              01  DD 00106          PUSHL   #1                                      ;
                00028362      8F  DD 00108          PUSHL   #164706                                 ;
                69            03  FB 0010E          CALLS   #3, LIB$SIGNAL                          ;
                              57  D5 00111 17$:     TSTL    NOUN_NODE                               ; 3704
                              0B  12 00113          BNEQ    19$                                     ;
                0B            62  91 00115          CMPB    (R2), #11                               ; 3707
                              03  12 00118          BNEQ    18$                                     ;
                58            01  D0 0011A          MOVL    #1, SHOW_CANCEL_ALL                     ; 3709
                          00C1  31  D0 0011D 18$:     BRW     27$                                     ; 3704
            08  AE              67  D0 00120 19$:     MOVL    (NOUN_NODE), PRIMARY                    ; 3726
            19  A6              20  8A 00124          BICB2   #32, 25(EVENT_ENTRY)                    ; 3727
                        14  A6  95  00128          TSTB    20(EVENT_ENTRY)                         ; 3728
                              06  13 0012B          BEQL    20$                                     ;
                01        14  A6  91 0012D          CMPB    20(EVENT_ENTRY), #1                     ; 3729
                              1B  12 00131          BNEQ    22$                                     ;
                50        08  AE  D0 00133 20$:     MOVL    PRIMARY, R0                             ; 3732
                79        8F  02  A0 91 00137       CMPB    2(R0), #121                             ;
                              10  12 0013C          BNEQ    22$                                     ;
                02        07  A0  91 0013E          CMPB    7(R0), #2                               ; 3735
                              06  13 00142          BEQL    21$                                     ;
                08        07  A0  91 00144          CMPB    7(R0), #8                               ; 3736
                              04  12 00148          BNEQ    22$                                     ;
            19  A6              20  88 0014A 21$:     BISB2   #32, 25(EVENT_ENTRY)                    ; 3738
                        08  AC  DD 0014E 22$:     PUSHL   MESSAGE_VECT                            ; 3750
        04  19  A6              05  E1 00151          BBC     #5, 25(EVENT_ENTRY), 23$                ; 3745
                              01  DD 00156          PUSHL   #1                                      ;
                              02  11 00158          BRB     24$                                     ;
                              7E  D4 0015A 23$:     CLRL    -(SP)                                   ;
                        08  AE  9F 0015C 24$:     PUSHAB  ADR_TYP                                 ; 3744
                        1C  AE  9F 0015F          PUSHAB  ADDRESS                                 ;
                        18  AE  DD 00162          PUSHL   PRIMARY                                 ;
        00000000G       00      05  FB 00165          CALLS   #5, DBG$NGET_ADDRESS                    ;
                        04      50  E8 0016C          BLBS    R0, 25$                                 ;
                        50      04  D0 0016F          MOVL    #4, R0                                  ; 3752
                                04  00172          RET                                             ;
            2C  A6      10  AE  D0 00173 25$:     MOVL    ADDRESS, 44(EVENT_ENTRY)                ; 3755
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                13      19   A6                05   E0 00178          BBS     #5, 25(EVENT_ENTRY), 26$                        ; 3756
                                            10  AE   DD 0017D          PUSHL   ADDRESS                                         ; 3759
                    00000000G   00              01   FB 00180          CALLS   #1, DBG$IS_IT_ENTRY                             ;
                                06              50   E9 00187          BLBC    R0, 26$                                         ;
            2C  A6      10      AE              02   C1 0018A          ADDL3   #2, ADDRESS, 44(EVENT_ENTRY)                   ; 3761
                        28      A6              67   D0 00190 26$:     MOVL    (NOUN_NODE), 40(EVENT_ENTRY)                    ; 3768
                                                7E   D4 00194          CLRL    -(SP)                                           ; 3769
                                            08  AE   9F 00196          PUSHAB  DUMMY                                           ;
                                            10  AE   9F 00199          PUSHAB  PRIMARY                                         ;
                                            28  A6   DD 0019C          PUSHL   40(EVENT_ENTRY)                                 ;
                    00000000G   00              04   FB 0019F          CALLS   #4, DBG$NCOPY_DESC                              ;
                                            0C  AE   9F 001A6          PUSHAB  VALUE                                           ; 3774
                                7E              83   8F 9A 001A9      MOVZBL  #131, -(SP)                                     ;
                                            10  AE   DD 001AD          PUSHL   PRIMARY                                         ;
                    00000000G   00              03   FB 001B0          CALLS   #3, DBG$PRIM_TO_VAL                             ;
                                50          0C  AE   D0 001B7          MOVL    VALUE, R0                                       ; 3775
            34  A6      14      A0              0C   28 001BB          MOVC3   #12, 20(R0), 52(EVENT_ENTRY)                    ; 3776
                                57          08  A7   D0 001C1          MOVL    8(NOUN_NODE), NOUN_NODE                         ; 3781
                                                1A   13 001C5          BEQL    27$                                             ; 3788
                                                10   DD 001C7          PUSHL   #16                                             ; 3796
                    00000000G   00              01   FB 001C9          CALLS   #1, DBG$GET_MEMORY                              ;
                                56              50   D0 001D0          MOVL    R0, EVENT_ENTRY                                 ;
                66      18      BE      0040    8F   28 001D3          MOVC3   #64, @EVENT_QUEUE, (EVENT_ENTRY)                ; 3798
                        18      AE              66   0E 001DA          INSQUE  (EVENT_ENTRY), EVENT_QUEUE                      ; 3803
                                            FF3F    31   001DE          BRW     19$                                             ; 3788
                                                55   D4 001E1 27$:     CLRL    SHOWED_CANCELED_ANY                             ; 3824
                                50          18  AE   9E 001E3 28$:     MOVAB   EVENT_QUEUE, R0                                 ; 3825
                                50          18  AE   D1 001E7          CMPL    EVENT_QUEUE, R0                                 ;
                                                03   12 001EB          BNEQ    29$                                             ;
                                            011B    31   001ED          BRW     56$                                             ;
                                56          18  AE   D0 001F0 29$:     MOVL    EVENT_QUEUE, EVENT_ENTRY                        ; 3832
                                52              6B   D0 001F4          MOVL    EVENT$CMD_QUEUE, QUEUE_ENTRY                    ; 3837
                                                54   D4 001F7          CLRL    SHOWED_CANCELED_ONE                             ; 3842
                                50              6B   9E 001F9 30$:     MOVAB   EVENT$CMD_QUEUE, R0                             ; 3843
                                50              52   D1 001FC          CMPL    QUEUE_ENTRY, R0                                 ;
                                                03   12 001FF          BNEQ    31$                                             ;
                                            00B3    31   00201          BRW     47$                                             ;
                                53      14      A2   9E 00204 31$:     MOVAB   20(QUEUE_ENTRY), R3                             ; 3849
                                                63   D5 00208          TSTL    (R3)                                            ;
                                                03   18 0020A          BGEQ    33$                                             ;
                                            00A2    31   0020C 32$:     BRW     46$                                             ;
                                63      14      A6   91 0020F 33$:     CMPB    20(EVENT_ENTRY), (R3)                           ; 3857
                                                F7   12 00213          BNEQ    32$                                             ;
                                55              01   D0 00215          MOVL    #1, SHOWED_CANCELED_ANY                         ; 3866
                                6F              58   E8 00218          BLBS    SHOW_CANCEL_ALL, 42$                            ; 3873
                                50      15      A6   9A 0021B          MOVZBL  21(EVENT_ENTRY), R0                             ; 3884
                                50      01      A3   91 0021F          CMPB    1(R3), R0                                       ; 3885
                                                E7   12 00223          BNEQ    32$                                             ;
                                                50   D5 00225          TSTL    R0                                              ; 3901
                                                35   12 00227          BNEQ    37$                                             ;
                                50      16      A6   9A 00229          MOVZBL  22(EVENT_ENTRY), CODE_1                         ; 3911
                                51      02      A3   9A 0022D          MOVZBL  2(R3), CODE_2                                   ; 3912
                                03              50   D1 00231          CMPL    CODE_1, #3                                      ; 3913
                                                0F   13 00234          BEQL    34$                                             ;
                                04              50   D1 00236          CMPL    CODE_1, #4                                      ; 3914
                                                0A   13 00239          BEQL    34$                                             ;
                                03              51   D1 0023B          CMPL    CODE_2, #3                                      ; 3915
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                                                05  13 0023E          BEQL    34$                                                     ;
                                        04      51  D1 00240          CMPL    CODE_2, #4                                              ; 3916
                                                09  12 00243          BNEQ    36$                                                     ;
                                    2C  A2      2C  A6 D1 00245 34$:    CMPL    44(EVENT_ENTRY), 44(QUEUE_ENTRY)                        ; 3919
                                                65  12 0024A 35$:     BNEQ    46$                                                     ;
                                                3C  11 0024C          BRB     42$                                                     ;
                                                34  A2 9F 0024E 36$:     PUSHAB  52(QUEUE_ENTRY)                                         ; 3922
                                                34  A6 9F 00251          PUSHAB  52(EVENT_ENTRY)                                         ; 3921
                                0000V   CF              02  FB 00254          CALLS   #2, COMPARE_VMSDESC                             ; 3922
                                        55              50  E9 00259          BLBC    R0, 46$                                         ;
                                                        2C  11 0025C          BRB     42$                                             ; 3925
                                        01              50  91 0025E 37$:     CMPB    R0, #1                                          ; 3933
                                                        22  12 00261          BNEQ    41$                                             ;
                                04              05      16  A6 8F 00263          CASEB   22(EVENT_ENTRY), #5, #4                         ; 3934
                        0011            000A            000A    00268 38$:      .WORD   39$-38$,-                                       ;
                                                        0011    00270                   39$-38$,-                                       ;
                                                                                        39$-38$,-                                       ;
                                                                                        40$-38$,-                                       ;
                                                                                        40$-38$                                         ;
                                    02  A3      16  A6 91 00272 39$:     CMPB    22(EVENT_ENTRY), 2(R3)                          ; 3940
                                                D1  11 00277          BRB     35$                                                     ;
                                        08      02  A3 91 00279 40$:     CMPB    2(R3), #8                                       ; 3946
                                                0B  13 0027D          BEQL    42$                                                     ;
                                        09      02  A3 91 0027F          CMPB    2(R3), #9                                       ; 3948
                                                C5  11 00283          BRB     35$                                                     ;
                                        02              50  91 00285 41$:     CMPB    R0, #2                                          ; 3959
                                                        19  12 00288          BNEQ    45$                                             ;
                                        0B      04      BC  91 0028A 42$:     CMPB    @VERB_NODE, #11                                 ; 3960
                                                        09  12 0028E          BNEQ    43$                                             ;
                                                        52  DD 00290          PUSHL   QUEUE_ENTRY                                     ;
                                0000V   CF              01  FB 00292          CALLS   #1, SHOW_EVENT_ENTRY                            ;
                                                        05  11 00297          BRB     44$                                             ;
                                    03  A3          80  8F 88 00299 43$:     BISB2   #128, 3(R3)                                     ;
                                        54              01  D0 0029E 44$:     MOVL    #1, SHOWED_CANCELED_ONE                         ;
                                                        0E  11 002A1          BRB     46$                                             ; 3892
                                                    78  AA 9F 002A3 45$:     PUSHAB  P.ACG                                           ; 3966
                                                        01  DD 002A6          PUSHL   #1                                              ;
                                                00028362    8F DD 002A8          PUSHL   #164706                                         ;
                                        69                  03  FB 002AE          CALLS   #3, LIB$SIGNAL                              ;
                                        52                  62  D0 002B1 46$:     MOVL    (QUEUE_ENTRY), QUEUE_ENTRY                  ; 3981
                                                        FF42    31 002B4          BRW     30$                                             ; 3843
                                        42                  54  E8 002B7 47$:     BLBS    SHOWED_CANCELED_ONE, 55$                    ; 3988
                                        3F                  55  E9 002BA          BLBC    SHOWED_CANCELED_ANY, 55$                    ;
                    50      04  BC                  08      08  EF 002BD          EXTZV   #8, #8, @VERB_NODE, R0                      ; 3990
                                                            05  15 002C3          BLEQ    48$                                         ; 3992
                                        02                  50  91 002C5          CMPB    R0, #2                                      ;
                                                            05  1B 002C8          BLEQU   49$                                         ;
                                        04                  50  91 002CA 48$:     CMPB    R0, #4                                      ;
                                                            08  12 002CD          BNEQ    50$                                         ;
                                                00028018    8F DD 002CF 49$:     PUSHL   #163867                                     ;
                                                            22  11 002D5          BRB     54$                                         ;
                                        09                  50  91 002D7 50$:     CMPB    R0, #9                                      ; 3995
                                                            05  13 002DA          BEQL    51$                                         ;
                                        0B                  50  91 002DC          CMPB    R0, #11                                     ;
                                                            08  12 002DF          BNEQ    52$                                         ;
                                                00028023    8F DD 002E1 51$:     PUSHL   #163875                                     ;
                                                            10  11 002E7          BRB     54$                                         ;
```

```
                                 0E              50  91 002E9 52$:    CMPB    R0, #14                          ; 3997
                                                 05  13 002EC         BEQL    53$
                                 7E              01  CE 002EE         MNEGL   #1, -(SP)
                                                 06  11 002F1         BRB     54$
                                     0002802B    8F  DD 002F3 53$:    PUSHL   #163883
                                 69              01  FB 002F9 54$:    CALLS   #1, LIB$SIGNAL                   ; 3990
                                 56              66  0F 002FC 55$:    REMQUE  (EVENT_ENTRY), EVENT_ENTRY       ; 4005
                                                 56  DD 002FF         PUSHL   EVENT_ENTRY                      ; 4006
                          00000000G              00  01  FB 00301     CALLS   #1, DBG$REL_MEMORY
                                                     FED8  31 00308    BRW     28$                              ; 3825
                                 3F              55  E8 0030B 56$:    BLBS    SHOWED_CANCELED_ANY, 64$         ; 4012
        50      04      BC                      08  EF 0030E         EXTZV   #8, #8, @VERB_NODE, R0           ; 4014
                                                 05  15 00314         BLEQ    57$                              ; 4016
                                 02              50  91 00316         CMPB    R0, #2
                                                 05  1B 00319         BLEQU   58$
                                 04              50  91 0031B 57$:    CMPB    R0, #4
                                                 08  12 0031E         BNEQ    59$
                                     00028013    8F  DD 00320 58$:    PUSHL   #163859
                                                 22  11 00326         BRB     63$
                                 09              50  91 00328 59$:    CMPB    R0, #9                           ; 4019
                                                 05  13 0032B         BEQL    60$
                                 0B              50  91 0032D         CMPB    R0, #11
                                                 08  12 00330         BNEQ    61$
                                     00028033    8F  DD 00332 60$:    PUSHL   #163891
                                                 10  11 00338         BRB     63$
                                 0E              50  91 0033A 61$:    CMPB    R0, #14                          ; 4021
                                                 05  13 0033D         BEQL    62$
                                 7E              01  CE 0033F         MNEGL   #1, -(SP)
                                                 06  11 00342         BRB     63$
                                     0002803B    8F  DD 00344 62$:    PUSHL   #163899
                                 69              01  FB 0034A 63$:    CALLS   #1, LIB$SIGNAL                   ; 4014
                                 50              01  D0 0034D 64$:    MOVL    #1, R0                           ; 4029
                                                     04 00350         RET                                      ; 4030

; Routine Size:  849 bytes,    Routine Base:  DBG$CODE + 15E8
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```
;  3909     4031  1 GLOBAL ROUTINE DBG$EVENT_CANCEL_ALL: NOVALUE =
;  3910     4032  1 !
;  3911     4033  1 ! FUNCTION
;  3912     4034  1 !       This routine cancels all eventpoints.
;  3913     4035  1 !
;  3914     4036  1 ! INPUTS
;  3915     4037  1 !       NONE
;  3916     4038  1 !
;  3917     4039  1 ! OUTPUTS
;  3918     4040  1 !       All command event entries are deleted from the command queue.
;  3919     4041  1 !
;  3920     4042  1
;  3921     4043  2     BEGIN
;  3922     4044  2     LOCAL
;  3923     4045  2         EVENT_ENTRY :   REF EVENT$EVENT_DESCRIPTOR; ! Event entry pointer
;  3924     4046  2
;  3925     4047  2
;  3926     4048  2
;  3927     4049  2     ! Starting at the head of the command queue, 'delete' the command
;  3928     4050  2     ! entries.
;  3929     4051  2     !
;  3930     4052  2     EVENT_ENTRY = .EVENT$CMD_QUEUE [L_QUEUE_FLINK];
;  3931     4053  2     WHILE .EVENT_ENTRY NEQA EVENT$CMD_QUEUE DO
;  3932     4054  3         BEGIN
;  3933     4055  3
;  3934     4056  3
;  3935     4057  3         ! Ignore 'deleted' entries that haven't been removed.
;  3936     4058  3         !
;  3937     4059  3         IF NOT .EVENT_ENTRY [EVENT$V_DELETED]
;  3938     4060  3         THEN
;  3939     4061  3
;  3940     4062  3
;  3941     4063  3             ! If this is a BREAK, TRACE, or WATCH command, delete it.
;  3942     4064  3             !
;  3943     4065  4             IF (.EVENT_ENTRY [EVENT$B_CMD_TYPE] EQLU
;  3944     4066  4                 EVENT$K_TYPE_BREAK
;  3945     4067  3                ) OR
;  3946     4068  4                (.EVENT_ENTRY [EVENT$B_CMD_TYPE] EQLU
;  3947     4069  4                 EVENT$K_TYPE_TRACE
;  3948     4070  3                ) OR
;  3949     4071  4                (.EVENT_ENTRY [EVENT$B_CMD_TYPE] EQLU
;  3950     4072  4                 EVENT$K_TYPE_WATCH
;  3951     4073  4                )
;  3952     4074  3             THEN
;  3953     4075  3                 EVENT_ENTRY [EVENT$V_DELETED] = TRUE;
;  3954     4076  3
;  3955     4077  3
;  3956     4078  3         ! Point to the next Command Queue entries.
;  3957     4079  3         !
;  3958     4080  3         EVENT_ENTRY = .EVENT_ENTRY [EVENT$L_CMD_FLINK];
;  3959     4081  2         END;
;  3960     4082  1     END;
```

```
                                 0004 00000          .ENTRY  DBG$EVENT_CANCEL_ALL, Save R2                ; 4031
                         52 00000000'  EF  9E 00002  MOVAB   EVENT$CMD_QUEUE, R2                         ;
                         50            62  D0 00009  MOVL    EVENT$CMD_QUEUE, EVENT_ENTRY                ; 4052
                         51            62  9E 0000C  1$:     MOVAB   EVENT$CMD_QUEUE, R1                 ; 4053
                         51            50  D1 0000F          CMPL    EVENT_ENTRY, R1                     ;
                                       1F  13 00012          BEQL    4$                                  ;
                                 17    A0  95 00014          TSTB    23(EVENT_ENTRY)                     ; 4059
                                       15  19 00017          BLSS    3$                                  ;
                         51      14    A0  9A 00019          MOVZBL  20(EVENT_ENTRY), R1                 ; 4065
                                       0A  13 0001D          BEQL    2$                                  ;
                         01            51  91 0001F          CMPB    R1, #1                              ; 4068
                                       05  13 00022          BEQL    2$                                  ;
                         02            51  91 00024          CMPB    R1, #2                              ; 4071
                                       05  12 00027          BNEQ    3$                                  ;
                   17    A0      80    8F  88 00029  2$:     BISB2   #128, 23(EVENT_ENTRY)               ; 4075
                         50            60  D0 0002E  3$:     MOVL    (EVENT_ENTRY), EVENT_ENTRY          ; 4080
                                       D9  11 00031          BRB     1$                                  ; 4053
                                           04 00033  4$:     RET                                         ; 4082

; Routine Size:  52 bytes,    Routine Base:  DBG$CODE + 1939
```

```
;3962     4083  1 GLOBAL ROUTINE DBG$ACTIVATE_EVENTS. NOVALUE =
;3963     4084  1 !
;3964     4085  1 ! FUNCTION
;3965     4086  1 !       This routine activates all set events.
;3966     4087  1 !
;3967     4088  1 ! INPUTS
;3968     4089  1 !       NONE
;3969     4090  1 !
;3970     4091  1 ! OUTPUTS
;3971     4092  1 !       The events are activated, including the setting of breakpoints, the
;3972     4093  1 !       setting of protections, etc.  The exception lists are also built.
;3973     4094  1 !
;3974     4095  1
;3975     4096  2     BEGIN
;3976     4097  2
;3977     4098  2     LOCAL
;3978     4099  2         USERS_FP: REF BLOCK [,BYTE],
;3979     4100  2         EVENT_ENTRY :   REF EVENT$EVENT_DESCRIPTOR, ! Event entry pointer
;3980     4101  2         NEXT_ENTRY :    REF EVENT$EVENT_DESCRIPTOR, ! Event entry pointer
;3981     4102  2         PAGE_ENTRY :    REF EVENT$PAGE_DESCRIPTOR;  ! Page entry pointer
;3982     4103  2
;3983     4104  2
;3984     4105  2     ! Turn off the TBIT flag, which will be set by any event(s) that need
;3985     4106  2     ! to use it....
;3986     4107  2     !
;3987     4108  2     DBG$RUNFRAME [DBG$V_TBIT] = FALSE;
;3988     4109  2
;3989     4110  2
;3990     4111  2     ! Point to the first Command Queue entry, and begin to process each entry
;3991     4112  2     ! in turn.
;3992     4113  2     !
;3993     4114  2     USERS_FP = 0;
;3994     4115  2     EVENT_ENTRY = .EVENT$CMD_QUEUE [L_QUEUE_FLINK];
;3995     4116  2     WHILE .EVENT_ENTRY NEQA EVENT$CMD_QUEUE [A_QUEUE_ENTRY] DO
;3996     4117  3         BEGIN
;3997     4118  3
;3998     4119  3
;3999     4120  3         ! Point to the next entry (in case we end up deleting this one !!!
;4000     4121  3         !
;4001     4122  3         NEXT_ENTRY = .EVENT_ENTRY [EVENT$L_CMD_FLINK];
;4002     4123  3
;4003     4124  3
;4004     4125  3         ! 'Delete' IGNOR entries....
;4005     4126  3         !
;4006     4127  3         IF .EVENT_ENTRY [EVENT$B_CMD_TYPE] EQLU EVENT$K_TYPE_IGNOR
;4007     4128  3         THEN
;4008     4129  3             EVENT_ENTRY [EVENT$V_DELETED] = TRUE;
;4009     4130  3
;4010     4131  3
;4011     4132  3         ! Delete or Activate this event.
;4012     4133  3         !
;4013     4134  3         IF .EVENT_ENTRY [EVENT$V_DELETED]
;4014     4135  3         THEN
;4015     4136  4             BEGIN
;4016     4137  4
;4017     4138  4             ! *****SSI
;4018     4139  4             ! EVENT$K_TYPE_SSINT Event is put on Event List, when we see
```

```
; 4019          4140  4          ! DBG$_SS_INT signal comes in (DEBUG interception routine is
; 4020          4141  4          ! called, trigged by System Service Call).  Bit 15 is set in
; 4021          4142  4          ! saved PSW in the FP for System service.  When system service
; 4022          4143  4          ! returns, DEBUG catches Reserved Operand Fault, EVENT$K_TYPE_SSINT
; 4023          4144  4          ! is marked deleted.  Now, we just about to take this event entry
; 4024          4145  4          ! off the Event List.
; 4025          4146  4          ! Check to see if we just got back from Reserved Operand Fault
; 4026          4147  4          ! from intercept system service RET, if it is, remember FP.
; 4027          4148  4          ! For we need to turn S/RET active entry to delete entry.
; 4028          4149  4          ! S/RET was built from step over the CALLS SYS$XXX entry, since
; 4029          4150  4          ! we already got Reserved Operand Fault from RET, so we don't
; 4030          4151  4          ! want to do it again, so later on we can turn S/RET into normal
; 4031          4152  4          ! step entry.
; 4032          4153  4          !
; 4033          4154  4          IF .EVENT_ENTRY [EVENT$B_CMD_TYPE] EQL EVENT$K_TYPE_SSINT
; 4034          4155  4          THEN
; 4035          4156  4              USERS_FP = .EVENT_ENTRY [EVENT$L_USERS_FP]
; 4036          4157  4          ELSE
; 4037          4158  4              USERS_FP = 0;
; 4038          4159  4          DELETE_EVENT_ENTRY (.EVENT_ENTRY);
; 4039          4160  4          END
; 4040          4161  3      ELSE
; 4041          4162  3          DBG$ACTIVATE_EVENT (.EVENT_ENTRY);
; 4042          4163  3
; 4043          4164  3
; 4044          4165  3      ! Point to the next event and continue.
; 4045          4166  3      !
; 4046          4167  3      EVENT_ENTRY = .NEXT_ENTRY;
; 4047          4168  3
; 4048          4169  3
; 4049          4170  3      ! *****SSI
; 4050          4171  3      ! Check to see if this the case we noted above.  Turn S/RET into
; 4051          4172  3      ! normal Step entry.
; 4052          4173  3      !
; 4053          4174  3      IF .USERS_FP NEQ 0
; 4054          4175  3      THEN
; 4055          4176  4          BEGIN
; 4056          4177  4          IF .EVENT_ENTRY [EVENT$B_SUB_KIND] EQL EVENT$K_ACC_RTRN
; 4057          4178  4          THEN
; 4058          4179  5              BEGIN
; 4059          4180  5              IF .EVENT_ENTRY [EVENT$B_CMD_TYPE] EQL EVENT$K_TYPE_STEPS
; 4060          4181  5              THEN
; 4061          4182  5                  IF .USERS_FP EQL .EVENT_ENTRY [EVENT$L_USERS_FP]
; 4062          4183  5                  THEN
; 4063          4184  5
; 4064          4185  5
; 4065          4186  5                      ! Change it to regular step entry.
; 4066          4187  5                      !
; 4067          4188  6                      BEGIN
; 4068          4189  6                      IF .EVENT_ENTRY [EVENT$V_STEP_BPT]
; 4069          4190  6                      THEN
; 4070          4191  7                          BEGIN
; 4071          4192  7                          EVENT_ENTRY [EVENT$V_STEP_BPT] = FALSE;
; 4072          4193  7                          EVENT_ENTRY [EVENT$B_CMD_KIND] = EVENT$K_KIND_INS;
; 4073          4194  7                          EVENT_ENTRY [EVENT$B_SUB_KIND] = .EVENT_ENTRY [EVENT$B_SAVED_SUB_KIND];
; 4074          4195  6                          END;
; 4075          4196  5                      END;
```

```
;  4076          4197  4                END;
;  4077          4198  3            END;
;  4078          4199  2        END;
;  4079          4200  2
;  4080          4201  2
;  4081          4202  2        ! As long as were not skipping ACCVIO's, for each entry in the page
;  4082          4203  2        ! queue, write protect the page described.  If we ARE skipping then
;  4083          4204  2        ! we have to TBIT.
;  4084          4205  2        ! *****SSI
;  4085          4206  2        ! If we are in the middle of the system service cycle, we don't want
;  4086          4207  2        ! want to put the protection back, for if we do, we may cause the
;  4087          4208  2        ! system service to fail again.  Note: Some system service
;  4088          4209  2        ! calls system service, the cycle starts from the call in user program
;  4089          4210  2        ! till this call is returned to the user program.  During this time
;  4090          4211  2        ! frame, we don't want to put protection back.
;  4091          4212  2        !
;  4092          4213  2        IF NOT .SKIP_ACCVIOS AND
;  4093          4214  2           NOT .DBG$GB_SET_WATCH_FLAG
;  4094          4215  2        THEN
;  4095          4216  3            BEGIN
;  4096          4217  3            PAGE_ENTRY = .EVENT$PAGE_QUEUE [L_QUEUE_FLINK];
;  4097          4218  3            WHILE .PAGE_ENTRY NEQA EVENT$PAGE_QUEUE DO
;  4098          4219  4                BEGIN
;  4099          4220  4                LOCAL
;  4100          4221  4                    ADDRESS :       VECTOR [2];     ! Address range for protect
;  4101          4222  4
;  4102          4223  4                ADDRESS [0] = .PAGE_ENTRY [EVENT$L_PAGE_ADDRESS];
;  4103          4224  4                ADDRESS [1] = .PAGE_ENTRY [EVENT$L_PAGE_ADDRESS];
;  4104        P 4225  4                IF NOT $SETPRT (INADR       = ADDRESS,
;  4105        P 4226  4                                PROT        = PRT$C_UR,
;  4106        P 4227  4                                PRVPRT      = PAGE_ENTRY [EVENT$B_PAGE_PROTECTION]
;  4107          4228  5                               )
;  4108          4229  4                THEN
;  4109          4230  4                    SIGNAL (DBG$_NOWPROT)
;  411           4231  4                ELSE
;  411           4232  4                    PAGE_ENTRY = .PAGE_ENTRY [EVENT$L_PAGE_FLINK];
;  4112          4233  3                END;
;  4113          4234  2            END;
;  4114          4235  2
;  4115          4236  2
;  4116          4237  2        ! If we are skipping ACCVIO and WATCHES, T-bit over the cause.
;  4117          4238  2        ! (just had a accvio from the instruction write to the page that was
;  4118          4239  2        !  protected for watch pointing) or (just had a RET from Systerm Service).
;  4119          4240  2        !
;  4120          4241  2        IF .SKIP_ACCVIOS OR .SKIP_WATCHES
;  4121          4242  2        THEN
;  4122          4243  3            BEGIN
;  4123          4244  3
;  4124          4245  3            ! About to TBIT over the instruction that triggered a watchpoint.
;  4125          4246  3            ! We also have to make sure that we don't get interrupted by ASTs.
;  4126          4247  3            !
;  4127          4248  3            DBG$RUNFRAME [DBG$V_TBIT] = TRUE;
;  4128          4249  3            DBG$GV_CONTROL[DBG$V_CONTROL_TBIT] = TRUE;
;  4129          4250  2            END;
;  4130          4251  2
;  4131          4252  1        END;
```

```
                                00FC 00000          .ENTRY  DBG$ACTIVATE_EVENTS, Save R2,R3,R4,R5,R6,R7 ; 4083
                    57 00000000G   00   9E 00002    MOVAB   DBG$RUNFRAME+68, R7
                    56 00000000'   EF   9E 00009    MOVAB   SKIP_ACCVIOS, R6
                    55 00000000'   EF   9E 00010    MOVAB   EVENT$CMD_QUEUE, R5
                    5E             08   C2 00017    SUBL2   #8, SP
                    67             10   8A 0001A    BICB2   #16, DBG$RUNFRAME+68                       ; 4108
                                   53   D4 0001D    CLRL    USERS_FP                                   ; 4114
                    52             65   D0 0001F    MOVL    EVENT$CMD_QUEUE, EVENT_ENTRY               ; 4115
                    50             65   9E 00022 1$: MOVAB   EVENT$CMD_QUEUE, R0                       ; 4116
                    50             52   D1 00025    CMPL    EVENT_ENTRY, R0
                                   5E   13 00028    BEQL    7$
                    54             62   D0 0002A    MOVL    (EVENT_ENTRY), NEXT_ENTRY                  ; 4122
                    05       14    A2   91 0002D    CMPB    20(EVENT_ENTRY), #5                        ; 4127
                                   05   12 00031    BNEQ    2$
                17  A2       80    8F   88 00033    BISB2   #128, 23(EVENT_ENTRY)                      ; 4129
                             17    A2   95 00038 2$: TSTB    23(EVENT_ENTRY)                            ; 4134
                                   17   13 0003B    BGEQ    5$
                    06       14    A2   91 0003D    CMPB    20(EVENT_ENTRY), #6                        ; 4154
                                   06   12 00041    BNEQ    3$
                    53       24    A2   D0 00043    MOVL    36(EVENT_ENTRY), USERS_FP                  ; 4156
                                   02   11 00047    BRB     4$
                                   53   D4 00049 3$: CLRL    USERS_FP                                   ; 4158
                                   52   DD 0004B 4$: PUSHL   EVENT_ENTRY                               ; 4159
              0000V CF             01   FB 0004D    CALLS   #1, DELETE_EVENT_ENTRY
                                   07   11 00052    BRB     6$                                         ; 4134
                                   52   DD 00054 5$: PUSHL   EVENT_ENTRY                               ; 4162
              0000V CF             01   FB 00056    CALLS   #1, DBG$ACTIVATE_EVENT
                    52             54   D0 0005B 6$: MOVL    NEXT_ENTRY, EVENT_ENTRY                    ; 4167
                                   53   D5 0005E    TSTL    USERS_FP                                   ; 4174
                                   C0   13 00060    BEQL    1$
                    04       16    A2   91 00062    CMPB    22(EVENT_ENTRY), #4                        ; 4177
                                   BA   12 00066    BNEQ    1$
                    03       14    A2   91 00068    CMPB    20(EVENT_ENTRY), #3                        ; 4180
                                   B4   12 0006C    BNEQ    1$
                      24     A2         53   D1 0006E    CMPL    USERS_FP, 36(EVENT_ENTRY)              ; 4182
                                   AE   12 00072    BNEQ    1$
                A9    19     A2         02   E1 00074    BBC     #2, 25(EVENT_ENTRY), 1$                ; 4189
                      19     A2         04   8A 00079    BICB2   #4, 25(EVENT_ENTRY)                    ; 4192
                      15     A2         01   90 0007D    MOVB    #1, 21(EVENT_ENTRY)                    ; 4193
                      16     A2   1B    A2   90 00081    MOVB    27(EVENT_ENTRY), 22(EVENT_ENTRY)       ; 4194
                                   9A   11 00086    BRB     1$                                         ; 4116
                    49             66   E8 00088 7$: BLBS    SKIP_ACCVIOS, 11$                          ; 4213
                    3E       FD    A5   E8 0008B    BLBS    DBG$GB_SET_WATCH_FLAG, 10$                 ; 4214
                    52       30    A5   D0 0008F    MOVL    EVENT$PAGE_QUEUE, PAGE_ENTRY               ; 4217
                    50       30    A5   9E 00093 8$: MOVAB   EVENT$PAGE_QUEUE, R0                      ; 4218
                    50             52   D1 00097    CMPL    PAGE_ENTRY, R0
                                   31   13 0009A    BEQL    10$
                    6E       08    A2   D0 0009C    MOVL    8(PAGE_ENTRY), ADDRESS                     ; 4223
                      04     AE    08   A2 D0 000A0 MOVL    8(PAGE_ENTRY), ADDRESS+4                   ; 4224
                                   0E   A2 9F 000A5 PUSHAB  14(PAGE_ENTRY)                             ; 4228
                                   0F   DD 000A8    PUSHL   #15
                                   7E   7C 000AA    CLRQ    -(SP)
                                   10   AE 9F 000AC PUSHAB  ADDRESS
```

```
                          00000000G  00              05  FB 000AF          CALLS   #5, SYS$SETPRT                          ;
                                     0F              50  E8 000B6          BLBS    R0, 9$                                 ;
                                        000284C4     8F  DD 000B9          PUSHL   #165060                                ; 4230
                          00000000G  00              01  FB 000BF          CALLS   #1, LIB$SIGNAL                         ;
                                     CB              11  000C6          BRB     8$                                     ;
                                     52              62  D0 000C8 9$:      MOVL    (PAGE_ENTRY), PAGE_ENTRY               ; 4232
                                     C6              11  000CB          BRB     8$                                     ; 4218
                                     04              66  E8 000CD 10$:     BLBS    SKIP_ACCVIOS, 11$                      ; 4241
                                     0A        04    A6  E9 000D0          BLBC    SKIP_WATCHES, 12$                      ;
                                     67              10  88 000D4 11$:     BISB2   #16, DBG$RUNFRAME+68                   ; 4248
                          00000000G  00              04  88 000D7          BISB2   #4, DBG$GV_CONTROL+1                   ; 4249
                                                        04  000DE 12$:     RET                                            ; 4252

; Routine Size:  223 bytes,    Routine Base:  DBG$CODE + 196D
```

```
;4133        4253  1 GLOBAL ROUTINE DBG$ACTIVATE_EVENT (EVENT): NOVALUE =
;4134        4254  1 !
;4135        4255  1 ! FUNCTION
;4136        4256  1 !       This routine activates an event.  Included in this action is the
;4137        4257  1 !       building of a linked list for each exception type used to implement
;4138        4258  1 !       any event:  BPT, TBIT, and ACCVIO.
;4139        4259  1 !
;4140        4260  1 ! INPUTS
;4141        4261  1 !       EVENT :         Pointer to an event entry.
;4142        4262  1 !
;4143        4263  1 ! OUTPUTS
;4144        4264  1 !       The event is activated, including the setting of breakpoints, the
;4145        4265  1 !       setting of protections, etc.  The exception lists are also built.
;4146        4266  1 !
;4147        4267  1
;4148        4268  2     BEGIN
;4149        4269  2     MAP EVENT :         REF EVENT$EVENT_DESCRIPTOR; ! Event entry pointer
;4150        4270  2     BUILTIN PROBER;
;4151        4271  2
;4152        4272  2     LOCAL
;4153        4273  2         ADDRESS,
;4154        4274  2         AT_LIBSIGNAL,                               ! Flag
;4155        4275  2         CALL_FRAME: REF VECTOR[,LONG],              ! Save part of the FP
;4156        4276  2         IGNOR_ENTRY :   REF EVENT$EVENT_DESCRIPTOR, ! Event entry pointer
;4157        4277  2         EVENT_ADDRESS : REF VECTOR [, BYTE],        ! Event byte address
;4158        4278  2         USERS_FP :      REF BLOCK [, BYTE],         ! User's current FP
;4159        4279  2         RET_PC,                                     ! Return PC
;4160        4280  2         STATUS,                                     ! Status value
;4161        4281  2         USERS_PC: REF VECTOR[,BYTE];                ! Users current PC
;4162        4282  2
;4163        4283  2     ! Case on the kind of event entry, to determine whether how to activate
;4164        4284  2     ! the entry.
;4165        4285  2     !
;4166        4286  2     CASE .EVENT [EVENT$B_CMD_KIND]
;4167        4287  2     FROM EVENT$K_KIND_ACC TO EVENT$K_KIND_EXC OF
;4168        4288  2         SET
;4169        4289  2         [EVENT$K_KIND_ACC]:
;4170        4290  2
;4171        4291  2
;4172        4292  2             ! Case on the access sub-kind....
;4173        4293  2             !
;4174        4294  2             CASE .EVENT[EVENT$B_SUB_KIND]
;4175        4295  2             FROM EVENT$K_ACC_READ TO EVENT$K_ACC_RTRN OF
;4176        4296  2                 SET
;4177        4297  2
;4178        4298  2
;4179        4299  2                 [EVENT$K_ACC_READ]:
;4180        4300  2                     ;
;4181        4301  2
;4182        4302  2
;4183        4303  2                 [EVENT$K_ACC_WRIT]:
;4184        4304  2                     ;
;4185        4305  2
;4186        4306  2
;4187        4307  2                 [EVENT$K_ACC_MDFY]:
;4188        4308  2                     ;
;4189        4309  2
```

```
;  4190          4310  2
;  4191          4311  2          ! Execution Access means that we've got to put a BPT
;  4192          4312  2          ! instruction at the address indicated.
;  4193          4313  2          !
;  4194          4314  2          [EVENT$K_ACC_EXEC]:
;  4195          4315  2              BEGIN
;  4196          4316  2
;  4197          4317  2
;  4198          4318  2              ! Get the event's address.
;  4199          4319  2              !
;  4200          4320  2              EVENT_ADDRESS = .EVENT [EVENT$L_ADDRESS];
;  4201          4321  2
;  4202          4322  2
;  4203          4323  2              ! Next, copy the opcode at the event's address into the
;  4204          4324  2              ! event entry for safe keeping.
;  4205          4325  2              !
;  4206          4326  2              EVENT [EVENT$B_OPCODE] = .EVENT_ADDRESS [0];
;  4207          4327  2
;  4208          4328  2
;  4209          4329  2              ! If the address we're to place a BPT is the current user
;  4210          4330  2              ! address, (meaning we're about to put a BPT where we're
;  4211          4331  2              ! about to start), create a ignore-event instead....
;  4212          4332  2              !
;  4213          4333  2              IF .EVENT_ADDRESS EQLA .DBG$RUNFRAME[DBG$L_USER_PC]
;  4214          4334  3              THEN
;  4215          4335  4                  BEGIN
;  4216          4336  4
;  4217          4337  4                  ! Get a new event descriptor, and link it into the
;  4218          4338  4                  ! command queue.  Note that this entry is placed on
;  4219          4339  4                  ! the HEAD of the queue, and should be encountered
;  4220          4340  4                  ! first !!!
;  4221          4341  4                  !
;  4222          4342  4                  IGNOR_ENTRY = DBG$GET_MEMORY (EVENT$K_EVENT_DESCRIPTOR_SIZE);
;  4223          4343  4                  INSQUE (.IGNOR_ENTRY, EVENT$CMD_QUEUE);
;  4224          4344  4
;  4225          4345  4
;  4226          4346  4                  ! Setup this entry to be a ignore-event.  Note that
;  4227          4347  4                  ! we don't really need to initialize more than the
;  4228          4348  4                  ! CMD_TYPE, including linking to the event entry
;  4229          4349  4                  ! causing this mess, 'cause this entry will just be
;  4230          4350  4                  ! deleted.  However, maybe in the future....
;  4231          4351  4                  !
;  4232          4352  4                  IGNOR_ENTRY [EVENT$B_CMD_TYPE] = EVENT$K_TYPE_IGNOR;
;  4233          4353  4                  IGNOR_ENTRY [EVENT$B_CMD_KIND] = EVENT$K_KIND_ACC;
;  4234          4354  4                  IGNOR_ENTRY [EVENT$B_SUB_KIND] = EVENT$K_ACC_EXEC;
;  4235          4355  4                  IGNOR_ENTRY [EVENT$V_ONCE_ONLY] = TRUE;
;  4236          4356  4                  INSQUEI (.IGNOR_ENTRY, .EVENT);
;  4237          4357  4
;  4238          4358  4
;  4239          4359  4                  ! Turn on the TBIT flag so that we'll TBIT over the
;  4240          4360  4                  ! next instruction, and return.
;  4241          4361  4                  !
;  4242          4362  4                  DBG$RUNFRAME [DBG$V_TBIT] = TRUE;
;  4243          4363  4                  DBG$GV_CONTROL[DBG$V_CONTROL_TBIT] = TRUE;
;  4244          4364  4                  RETURN;
;  4245          4365  4                  END;
;  4246          4366  3
```

```
;  4247          4367  3
;  4248          4368  3
;  4249          4369  3                    ! BPT is okay, write a BPT instruction into that address.
;  4250          4370  3                    ! Note that we won't actually do this if the original
;  4251          4371  3                    ! opcode was a BPT.
;  4252          4372  3                    !
;  4253          4373  3                    IF .EVENT [EVENT$B_OPCODE] NEQU BPT_INSTRUCTION
;  4254          4374  3                    THEN
;  4255          4375  4                        IF NOT WRITE_OPCODE (.EVENT_ADDRESS, BPT_INSTRUCTION)
;  4256          4376  3                        THEN
;  4257          4377  4                            BEGIN
;  4258          4378  4                            SIGNAL (DBG$_NOWBPT);
;  4259          4379  4                            RETURN;
;  4260          4380  3                            END;
;  4261          4381  2                    END;
;  4262          4382  2
;  4263          4383  2
;  4264          4384  2                ! Return Access means that we've got to put a BPT
;  4265          4385  2                ! instruction at the address indicated.
;  4266          4386  2                !
;  4267          4387  2                [EVENT$K_ACC_RTRN]:
;  4268          4388  3                    BEGIN
;  4269          4389  3
;  4270          4390  3
;  4271          4391  3                    ! Depending on the command type (STEP or otherwise)...
;  4272          4392  3                    !
;  4273          4393  3                    IF .EVENT [EVENT$B_CMD_TYPE] EQLU EVENT$K_TYPE_STEPS OR
;  4274          4394  3                       .EVENT [EVENT$B_CMD_TYPE] EQLU EVENT$K_TYPE_SKIPS OR
;  4275          4395  3                       .EVENT [EVENT$B_CMD_TYPE] EQLU EVENT$K_TYPE_SSINT
;  4276          4396  3                    THEN
;  4277          4397  4                        BEGIN
;  4278          4398  4
;  4279          4399  4
;  4280          4400  4                        ! If the save FP is 0, then we need to initialize
;  4281          4401  4                        ! with the current one.
;  4282          4402  4                        !
;  4283          4403  4                        USERS_FP = .EVENT [EVENT$L_USERS_FP];
;  4284          4404  4                        IF .USERS_FP EQLA 0
;  4285          4405  4                        THEN
;  4286          4406  5                            BEGIN
;  4287          4407  5                            USERS_FP = .DBG$RUNFRAME [DBG$L_USER_FP];
;  4288          4408  5                            EVENT [EVENT$L_USERS_FP] = .USERS_FP;
;  4289          4409  5                            CALL_FRAME = DBG$GET_MEMORY(5);
;  4290          4410  5                            EVENT [EVENT$L_CALL_FRAME] = .CALL_FRAME;
;  4291          4411  5                            CH$MOVE(20,.EVENT[EVENT$L_USERS_FP],.CALL_FRAME);
;  4292          4412  4                            END;
;  4293          4413  4
;  4294          4414  4                        IF NOT PROBER (%REF(0), %REF(20), .USERS_FP)
;  4295          4415  4                        THEN
;  4296          4416  4                            RETURN;
;  4297          4417  4
;  4298          4418  4
;  4299          4419  4                        ! Check for the special case where we have just
;  4300          4420  4                        ! called LIB$SIGNAL or LIB$STOP. The flag
;  4301          4421  4                        ! AT_LIBSIGNAL will be set to true if we are
;  4302          4422  4                        ! at LIB$SIGNAL or LIB$STOP
;  4303          4423  4                        !
```

```
;  4304          4424  4                    USERS_PC = .DBG$RUNFRAME[DBG$L_USER_PC];
;  4305          4425  4                    AT_LIBSIGNAL = FALSE;
;  4306          4426  4
;  4307          4427  4
;  4308          4428  4                    ! Check for current PC being at one of these
;  4309          4429  4                    ! locations. Here the locations we are checking
;  4310          4430  4                    ! are the addresses of LIB$SIGNAL and LIB$STOP
;  4311          4431  4                    ! in the LIBRTL shareable library.
;  4312          4432  4                    !
;  4313          4433  4                    IF (.USERS_PC EQL LIB$SIGNAL+2) OR
;  4314          4434  5                       (.USERS_PC EQL LIB$STOP+2)
;  4315          4435  4                    THEN
;  4316          4436  4                        AT_LIBSIGNAL = TRUE;
;  4317          4437  4
;  4318          4438  4
;  4319          4439  4                    ! Also check for the current PC being at the
;  4320          4440  4                    ! address of LIB$SIGNAL or LIB$STOP if these
;  4321          4441  4                    ! were linked into the users program with
;  4322          4442  4                    ! /NOSYSSHR on the link. In this case the
;  4323          4443  4                    ! symbols show up in the GST and we remember
;  4324          4444  4                    ! their addresses when we initialize the GST.
;  4325          4445  4                    !
;  4326          4446  4                    IF (.USERS_PC EQL .DBG$GL_LIB_SIGNAL_ADDR+2) OR
;  4327          4447  5                       (.USERS_PC EQL .DBG$GL_LIB_STOP_ADDR+2)
;  4328          4448  4                    THEN
;  4329          4449  4                        AT_LIBSIGNAL = TRUE;
;  4330          4450  4
;  4331          4451  4
;  4332          4452  4                    ! Also check for instruction at current location
;  4333          4453  4                    ! being a JMP to LIB$SIGNAL or LIB$STOP.
;  4334          4454  4                    !
;  4335          4455  4                    IF PROBER(%REF(0),
;  4336          4456  4                              %REF(6),
;  4337          4457  4                              .USERS_PC)
;  4338          4458  4                    THEN
;  4339          4459  5                        BEGIN
;  4340          4460  5                        IF (.USERS_PC[0] EQL %X'17') AND
;  4341          4461  6                           (.USERS_PC[1] EQL %X'FF')
;  4342          4462  5                        THEN
;  4343          4463  6                            BEGIN
;  4344          4464  6
;  4345          4465  6                            ! Get the jump address by adding the PC
;  4346          4466  6                            ! value plus the 6 bytes for the
;  4347          4467  6                            ! JMP instruction itself.
;  4348          4468  6                            !
;  4349          4469  6                            CH$MOVE(4, USERS_PC[2], ADDRESS);
;  4350          4470  6                            ADDRESS = .ADDRESS + .USERS_PC + 6;
;  4351          4471  6                            IF PROBER(%REF(0),
;  4352          4472  6                                      %REF(4),
;  4353          4473  6                                      .ADDRESS)
;  4354          4474  6                            THEN
;  4355          4475  6                                ADDRESS = ..ADDRESS;
;  4356          4476  6
;  4357          4477  6                            IF (.ADDRESS EQL LIB$SIGNAL+2) OR
;  4358          4478  7                               (.ADDRESS EQL LIB$STOP+2)
;  4359          4479  6                            THEN
;  4360          4480  6                                AT_LIBSIGNAL = TRUE;
```

```
;  4361          4481  5                    END;
;  4362          4482  4                END;
;  4363          4483  4
;  4364          4484  4            IF .AT_LIBSIGNAL
;  4365          4485  4            THEN
;  4366          4486  5                BEGIN
;  4367          4487  5
;  4368          4488  5                ! In this case, we do not want want to use
;  4369          4489  5                ! the dirty-the-tbit approach because
;  4370          4490  5                ! LIB$SIGNAL and LIB$STOP mess with the stack.
;  4371          4491  5                ! So we revert to the temporary breakpoint
;  4372          4492  5                ! method.
;  4373          4493  5                !
;  4374          4494  5                RET_PC = .USERS_FP[SF$L_SAVE_PC];
;  4375          4495  5                EVENT [EVENT$V_STEP_BPT] = TRUE;
;  4376          4496  5                EVENT [EVENT$B_CMD_KIND] = EVENT$K_KIND_INS;
;  4377          4497  5                EVENT [EVENT$B_SUB_KIND] = .EVENT [EVENT$B_SAVED_SUB_KIND];
;  4378          4498  5                IF .EVENT [EVENT$B_SUB_KIND] EQL 0
;  4379          4499  5                THEN
;  4380          4500  5                    EVENT [EVENT$B_SUB_KIND] = EVENT$K_INS_EVRY;
;  4381          4501  5                EVENT [EVENT$L_ADDRESS] = .RET_PC;
;  4382          4502  5                EVENT [EVENT$B_OPCODE] = .(.RET_PC)<0,8>;
;  4383          4503  6                IF NOT WRITE_OPCODE (.RET_PC, BPT_INSTRUCTION)
;  4384          4504  5                THEN
;  4385          4505  5                    SIGNAL(DBG$_NOWBPT);
;  4386          4506  5                RETURN;
;  4387          4507  4                END;
;  4388          4508  4
;  4389          4509  4
;  4390          4510  4                ! Turn on bit 15 in the user's run-
;  4391          4511  4                ! frame to get a reserved-operand
;  4392          4512  4                ! fault on the return.
;  4393          4513  4                !
;  4394          4514  4                MATCH_RIGHT_CALL_FRAME(.EVENT);
;  4395          4515  4                USERS_FP = .EVENT [EVENT$L_USERS_FP];
;  4396          4516  4                (USERS_FP [SF$W_SAVE_PSW])<15,1,0> = TRUE;
;  4397          4517  4                END
;  4398          4518  4
;  4399          4519  4
;  4400          4520  4            ! This is a [BREAK!TRACE]/RETURN to set up.
;  4401          4521  4            !
;  4402          4522  3            ELSE
;  4403          4523  4                BEGIN
;  4404          4524  4
;  4405          4525  4
;  4406          4526  4                ! Get the event's address.
;  4407          4527  4                !
;  4408          4528  4                EVENT_ADDRESS = .EVENT [EVENT$L_ADDRESS];
;  4409          4529  4
;  4410          4530  4
;  4411          4531  4                ! Next, copy the opcode at the event's address into the
;  4412          4532  4                ! event entry for safe keeping.
;  4413          4533  4                !
;  4414          4534  4                EVENT [EVENT$B_OPCODE] = .EVENT_ADDRESS [0];
;  4415          4535  4
;  4416          4536  4
;  4417          4537  4                ! If the address we're to place a BPT is the current
```

```
;  4418          4538  4     ! user address, (meaning we're about to put a BPT
;  4419          4539  4     ! where we're about to start), create a ignore-event
;  4420          4540  4     ! instead....
;  4421          4541  4     !
;  4422          4542  4     IF .EVENT_ADDRESS EQLA .DBG$RUNFRAME[DBG$L_USER_PC]
;  4423          4543  4     THEN
;  4424          4544  5         BEGIN
;  4425          4545  5
;  4426          4546  5
;  4427          4547  5         ! Get a new event descriptor, and link it into the
;  4428          4548  5         ! command queue.  Note that this entry is placed on
;  4429          4549  5         ! the HEAD of the queue, and should be encountered
;  4430          4550  5         ! first !!!
;  4431          4551  5         !
;  4432          4552  5         IGNOR_ENTRY = DBG$GET_MEMORY
;  4433          4553  5                       (EVENT$K_EVENT_DESCRIPTOR_SIZE);
;  4434          4554  5         INSQUE (.IGNOR_ENTRY, EVENT$CMD_QUEUE);
;  4435          4555  5
;  4436          4556  5
;  4437          4557  5         ! Setup this entry to be a ignore-event.  Note that
;  4438          4558  5         ! we don't really need to initialize more than the
;  4439          4559  5         ! CMD_TYPE, including linking to the event entry
;  4440          4560  5         ! causing this mess, 'cause this entry will just be
;  4441          4561  5         ! deleted.  However, maybe in the future....
;  4442          4562  5         ! If we are at /RET .PC, then we setup a skip entry
;  4443          4563  5         ! instead of ignore entry.
;  4444          4564  5         !
;  4445          4565  5         IF .EVENT [EVENT$V_RET_AT_PC]
;  4446          4566  5         THEN
;  4447          4567  5             IGNOR_ENTRY [EVENT$B_CMD_TYPE] = EVENT$K_TYPE_SKIPS
;  4448          4568  5         ELSE
;  4449          4569  5             IGNOR_ENTRY [EVENT$B_CMD_TYPE] = EVENT$K_TYPE_IGNOR;
;  4450          4570  5
;  4451          4571  5         IGNOR_ENTRY [EVENT$B_CMD_KIND] = EVENT$K_KIND_ACC;
;  4452          4572  5         IGNOR_ENTRY [EVENT$B_SUB_KIND] = EVENT$K_ACC_RTRN;
;  4453          4573  5         IGNOR_ENTRY [EVENT$V_ONCE_ONLY] = TRUE;
;  4454          4574  5         INSQUE1 (.IGNOR_ENTRY, .EVENT);
;  4455          4575  5
;  4456          4576  5
;  4457          4577  5         ! Turn on the TBIT flag so that we'll TBIT over the
;  4458          4578  5         ! next instruction, and return.
;  4459          4579  5         !
;  4460          4580  5         IF NOT .EVENT [EVENT$V_RET_AT_PC]
;  4461          4581  5         THEN
;  4462          4582  6             BEGIN
;  4463          4583  6             DBG$RUNFRAME [DBG$V_TBIT] = TRUE;
;  4464          4584  6             DBG$GV_CONTROL[DBG$V_CONTROL_TBIT] = TRUE;
;  4465          4585  5             END;
;  4466          4586  5         RETURN;
;  4467          4587  4         END;
;  4468          4588  4
;  4469          4589  4
;  4470          4590  4     ! Write a BPT instruction into that address.  Note that
;  4471          4591  4     ! we won't actually do this if the original opcode was
;  4472          4592  4     ! a BPT.
;  4473          4593  4     !
;  4474          4594  4     IF .EVENT [EVENT$B_OPCODE] NEQU BPT_INSTRUCTION
```

```
;  4475          4595  4                    THEN
;  4476          4596  5                        IF NOT WRITE_OPCODE (.EVENT_ADDRESS, BPT_INSTRUCTION)
;  4477          4597  4                        THEN
;  4478          4598  5                            BEGIN
;  4479          4599  5                            SIGNAL (DBG$_NOWBPT);
;  4480          4600  5                            RETURN;
;  4481          4601  4                            END;
;  4482          4602  3                    END;
;  4483          4603  2                END;
;  4484          4604  2            TES;
;  4485          4605  2
;  4486          4606  2
;  4487          4607  2        [EVENT$K_KIND_INS]:
;  4488          4608  3            BEGIN
;  4489          4609  3            LOCAL OPCODE;
;  4490          4610  3
;  4491          4611  3            OPCODE = .(.DBG$RUNFRAME[DBG$L_USER_PC])<0,8,0>;
;  4492          4612  3            ! If stepping over and a) it's time to BPT or b) we WERE BPTing...
;  4493          4613  3            !
;  4494          4614  3            IF .EVENT [EVENT$V_STEP_OVER] AND
;  4495          4615  4            (.EVENT [EVENT$V_STEP_BPT] OR .DBG$OPCODES_STEP_OVER[.OPCODE])
;  4496          4616  3            THEN
;  4497          4617  4                BEGIN
;  4498          4618  4
;  4499          4619  4                ! ... and we're not already in the middle...
;  4500          4620  4                !
;  4501          4621  4                IF NOT .EVENT [EVENT$V_STEP_BPT]
;  4502          4622  4                THEN
;  4503          4623  5                    BEGIN
;  4504          4624  6                    IF (.OPCODE EQL %X'FA') OR (.OPCODE EQL %X'FB')
;  4505          4625  5                    THEN
;  4506          4626  6                        BEGIN
;  4507          4627  6
;  4508          4628  6                        ! This is a CALLS or CALLG instruction. We implement
;  4509          4629  6                        ! STEP/OVER by a STEP/INTO,STEP/RETURN,STEP sequence
;  4510          4630  6                        ! We do this by temporarily turning the STEP event descriptor into a RETURN
;  4511          4631  6                        ! event descriptor (KIND = ACC, SUB_KIND = RTRN). This causes us to dirty up
;  4512          4632  6                        ! the call stack and get a reserved operand fault at the return. When we handle the
;  4513          4633  6                        ! ROPRAND then we change the return event back into a step event. We save the origin
;  4514          4634  6                        ! sub-kind field to enable us to do this correctly.
;  4515          4635  6                        !
;  4516          4636  6                        EVENT [EVENT$V_STEP_BPT] = TRUE;
;  4517          4637  6                        EVENT [EVENT$L_USER$_FP] = 0;
;  4518          4638  6                        EVENT [EVENT$B_CMD_KIND] = EVENT$K_KIND_ACC;
;  4519          4639  6                        EVENT [EVENT$B_SAVED_SUB_KIND] = .EVENT [EVENT$B_SUB_KIND];
;  4520          4640  6                        EVENT [EVENT$B_SUB_KIND] = EVENT$K_ACC_RTRN;
;  4521          4641  6                        DBG$RUNFRAME [DBG$V_TBIT] = TRUE;
;  4522          4642  6                        DBG$GV_CONTROL[DBG$V_CONTROL_TBIT] = TRUE;
;  4523          4643  6                        RETURN;
;  4524          4644  6                        END
;  4525          4645  5                    ELSE
;  4526          4646  6                        BEGIN
;  4527          4647  6
;  4528          4648  6                        ! This is a JSB-type instruction.  Get the address
;  4529          4649  6                        ! of the next instruction.
;  4530          4650  6                        !
;  4531          4651  6                        EVENT_ADDRESS = DBG$INS_DECODE (
```

```
;  4532          4652  6                .DBG$RUNFRAME[DBG$L_USER_PC], 0, FALSE);
;  4533          4653  6
;  4534          4654  6            ! If the address is in system or P1 space...
;  4535          4655  6            !
;  4536          4656  6            IF .EVENT_ADDRESS GEQA P1_SPACE OR
;  4537          4657  6               .EVENT_ADDRESS EQLA 0
;  4538          4658  6            THEN
;  4539          4659  6
;  4540          4660  6                ! ... then we're going to TBIT ('cause we won't set a
;  4541          4661  6                ! BPT in P1 space or in system space).
;  4542          4662  6                !
;  4543          4663  6                BEGIN
;  4544          4664  6
;  4545          4665  7                ! Check to see if this is address 0 or we're stepping
;  4546          4666  7                ! nosystem.  If so - belch.
;  4547          4667  7                !
;  4548          4668  7                IF .EVENT [EVENT$V_STEP_NOSYSTEM] OR
;  4549          4669  7                   .EVENT_ADDRESS EQLA 0
;  4550          4670  7                THEN
;  4551          4671  7                    SIGNAL (DBG$_STEPINTO, 1, .DBG$RUNFRAME[DBG$L_USER_PC]);
;  4552          4672  7
;  4553          4673  7                ! We're TBIT'n now...
;  4554          4674  7                !
;  4555          4675  7                DBG$RUNFRAME [DBG$V_TBIT] = TRUE;
;  4556          4676  7                RETURN;
;  4557          4677  7                END;
;  4558          4678  7
;  4559          4679  7            ! Otherwise, everything is hunky dory, so continue.  We'll
;  4560          4680  7            ! Set up the address in the event entry for the BPT.
;  4561          4681  6            !
;  4562          4682  6            ! Save the next address in to entry for the step's BPT.
;  4563          4683  6            !
;  4564          4684  6            EVENT [EVENT$L_ADDRESS] = .EVENT_ADDRESS;
;  4565          4685  6
;  4566          4686  6            ! Flag that a stepping-into BPT is set.
;  4567          4687  6            !
;  4568          4688  6            EVENT [EVENT$V_STEP_BPT] = TRUE;
;  4569          4689  6            END;
;  4570          4690  6        END
;  4571          4691  6
;  4572          4692  6        ! We're in the middle of stepping over, but we've been
;  4573          4693  6        ! interrupted, so continue....
;  4574          4694  6        !
;  4575          4695  5        ELSE
;  4576          4696  5            EVENT_ADDRESS = .EVENT [EVENT$L_ADDRESS];
;  4577          4697  5
;  4578          4698  5
;  4579          4699  5        ! We get here when a) we're in the middle of a step/over (i.e.
;  4580          4700  5        ! something interrupted the step/over), or we're at the start
;  4581          4701  5
;  4582          4702  4
;  4583          4703  4
;  4584          4704  4
;  4585          4705  4
;  4586          4706  4
;  4587          4707  4
;  4588          4708  4
```

```
;  4589          4709  4              ! of one (i.e. at a CALL/JSB-type instruction), and we've got
;  4590          4710  4              ! the address set up in the event entry (see above).
;  4591          4711  4              !
;  4592          4712  4              ! Next, copy the opcode at the event's address into the
;  4593          4713  4              ! event entry for safe keeping.
;  4594          4714  4              !
;  4595          4715  4              EVENT [EVENT$B_OPCODE] = .EVENT_ADDRESS [0];
;  4596          4716  4
;  4597          4717  4
;  4598          4718  4              ! Finally, write a BPT instruction into that address.
;  4599          4719  4              ! Note that we won't actually do this if the original
;  4600          4720  4              ! opcode was a BPT.
;  4601          4721  4              !
;  4602          4722  4              IF .EVENT [EVENT$B_OPCODE] NEQU BPT_INSTRUCTION
;  4603          4723  4              THEN
;  4604          4724  5                  IF NOT WRITE_OPCODE (.EVENT_ADDRESS, BPT_INSTRUCTION)
;  4605          4725  4                  THEN
;  4606          4726  5                      BEGIN
;  4607          4727  5                      SIGNAL (DBG$_STEPINTO, 1, .DBG$RUNFRAME[DBG$L_USER_PC]);
;  4608          4728  5                      DBG$RUNFRAME [DBG$V_TBIT] = TRUE;
;  4609          4729  5                      EVENT [EVENT$V_STEP_BPT] = FALSE;
;  4610          4730  5                      RETURN;
;  4611          4731  4                      END;
;  4612          4732  4              END
;  4613          4733  3          ELSE
;  4614          4734  3
;  4615          4735  3              ! We're not stepping over, or we aren't going to BPT, so we'll
;  4616          4736  3              ! TBIT.
;  4617          4737  3              !
;  4618          4738  4              BEGIN
;  4619          4739  4              EVENT [EVENT$V_STEP_BPT] = FALSE;
;  4620          4740  4              DBG$RUNFRAME [DBG$V_TBIT] = TRUE;
;  4621          4741  3              END;
;  4622          4742  2          END;
;  4623          4743  2
;  4624          4744  2
;  4625          4745  2          [EVENT$K_KIND_EXC]:
;  4626          4746  2              ;
;  4627          4747  2          TES;
;  4628          4748  1      END;


                                                  0FFC 00000          .ENTRY  DBG$ACTIVATE_EVENT, Save R2,R3,R4,R5,R6,R7,-; 4253
                                                                              R8,R9,R10,R11
                                  5B 00000000G    00   9E 00002      MOVAB   DBG$RUNFRAME+64, R11                          ;
                                  5E              14   C2 00009      SUBL2   #20, SP                                       ;
                                  56        04    AC   D0 0000C      MOVL    EVENT, R6                                     ; 4286
                                  59        14    A6   9E 00010      MOVAB   20(R6), R9                                    ;
                    02            00        01    A9   8F 00014      CASEB   1(R9), #0, #2                                 ;
                  02C4          01EE          0006       00019 1$:   .WORD   2$-1$,-                                       ;
                                                                              28$-1$,-                                      ;
                                                                              41$-1$                                        ;
                    04            00        02    A9   8F 0001F 2$:   CASEB   2(R9), #0, #4                                 ; 4294
          000B      02B9          02B9          02B9       00024 3$:   .WORD   41$-3$,-                                      ;
```

```
                        0066     0002C                          41$-3$,-                                                                ;
                                                                41$-3$,-                                                                ;
                                                                4$-3$,-                                                                 ;
                                                                8$-3$                                                                   ;
                                 04 0002E                  RET                                                                         ;
                58       2C   A6  D0 0002F  4$:           MOVL    44(R6), EVENT_ADDRESS                                               ; 4320
              30   A6          68  90 00033               MOVB    (EVENT_ADDRESS), 48(R6)                                             ; 4326
                   6B          58  D1 00037               CMPL    EVENT_ADDRESS, DBG$RUNFRAME+64                                      ; 4333
                               2C  12 0003A               BNEQ    5$                                                                  ;
                               10  DD 0003C               PUSHL   #16                                                                 ; 4343
  00000000G    00              01  FB 0003E               CALLS   #1, DBG$GET_MEMORY                                                  ;
                               57  D0 00045               MOVL    R0, IGNOR_ENTRY                                                     ;
  00000000'    EF              67  0E 00048               INSQUE  (IGNOR_ENTRY), EVENT$CMD_QUEUE                                      ; 4344
        14     A7              05  B0 C004F               MOVW    #5, 20(IGNOR_ENTRY)                                                 ; 4353
        16     A7              03  90 00053               MOVB    #3, 22(IGNOR_ENTRY)                                                 ; 4355
        17     A7              04  88 00057               BISB2   #4, 23(IGNOR_ENTRY)                                                 ; 4356
                            04 AC  DD 0005B               PUSHL   EVENT                                                               ; 4357
                               57  DD 0005E               PUSHL   IGNOR_ENTRY                                                         ;
      0000V    CF              02  FB 00060               CALLS   #2, INSQUE1                                                         ;
                            01E4   31 00065               BRW     32$                                                                 ; 4363
                50          04 AC  D0 00068  5$:          MOVL    EVENT, R0                                                           ; 4373
                03          30 A0  91 0006C               CMPB    48(R0), #3                                                          ;
                               4E  13 00070               BEQL    11$                                                                 ;
                   6E          03  D0 00072               MOVL    #3, OP                                                              ; 4375
                               01  DD 00075               PUSHL   #1                                                                  ;
                            04 AE  9F 00077               PUSHAB  OP                                                                  ;
                               58  DD 0007A               PUSHL   EVENT_ADDRESS                                                       ;
  00000000G    00              03  FB 0007C  6$:          CALLS   #3, DBG$WRITE_MEM                                                   ;
                03             50  E8 00083               BLBS    R0, 7$                                                              ;
                            0170   31 00086               BRW     27$                                                                 ;
                                 04 00089  7$:           RET                                                                         ; 4378
                03                69  91 0008A  8$:      CMPB    (R9), #3                                                            ; 4393
                                  0D  13 0008D            BEQL    9$                                                                  ;
                04                69  91 0008F            CMPB    (R9), #4                                                            ; 4394
                                  08  13 00092            BEQL    9$                                                                  ;
                06                69  91 00094            CMPB    (R9), #6                                                            ; 4395
                                  03  13 00097            BEQL    9$                                                                  ;
                               00EE   31 00099            BRW     22$                                                                 ;
                   5A       24    A6  D0 0009C  9$:       MOVL    36(R6), USERS_FP                                                    ; 4403
                               1A  12 000A0               BNEQ    10$                                                                 ; 4404
                   5A       F8    AB  D0 000A2            MOVL    DBG$RUNFRAME+56, USERS_FP                                           ; 4407
                24 A6             5A  D0 000A6            MOVL    USERS_FP, 36(R6)                                                    ; 4408
                                  05  DD 000AA            PUSHL   #5                                                                  ; 4409
     00000000G    00              01  FB 000AC            CALLS   #1, DBG$GET_MEMORY                                                  ;
           3C     A6              50  D0 000B3            MOVL    CALL_FRAME, 60(R6)                                                  ; 4410
60         24     B6              14  28 000B7            MOVC3   #20, @36(R6), (CALL_FRAME)                                          ; 4411
6A               14                00  0C 000BC  10$:     PROBER  #0, #20, (USERS_FP)                                                 ; 4414
                                  01  12 000C0  11$:     BNEQ    12$                                                                 ;
                                 04 000C2                  RET                                                                         ;
                50                6B  D0 000C3  12$:      MOVL    DBG$RUNFRAME+64, USERS_PC                                           ; 4424
                                  52  D4 000C6            CLRL    AT_LIBSIGNAL                                                        ; 4425
                51 00000000G      00  9E 000C8            MOVAB   LIB$SIGNAL+2, R1                                                    ; 4433
                51                50  D1 000CF            CMPL    USERS_PC, R1                                                        ;
                                  0C  13 000D2            BEQL    13$                                                                 ;
                51 00000000G      00  9E 000D4            MOVAB   LIB$STOP+2, R1                                                      ; 4434
                51                50  D1 000DB            CMPL    USERS_PC, R1                                                        ;
                                  03  12 000DE            BNEQ    14$                                                                 ;
```

```
                                52              01  D0 000E0 13$:    MOVL    #1, AT_LIBSIGNAL                        ; 4436
                51 00000000G    00              02  C1 000E3 14$:    ADDL3   #2, DBG$GL_LIB_SIGNAL_ADDR, R1          ; 4446
                                51              50  D1 000EB         CMPL    USERS_PC, R1                            ;
                                                0D  13 000EE         BEQL    15$                                     ;
                51 00000000G    00              02  C1 000F0         ADDL3   #2, DBG$GL_LIB_STOP_ADDR, R1            ; 4447
                                51              50  D1 000F8         CMPL    USERS_PC, R1                            ;
                                                03  12 000FB         BNEQ    16$                                     ;
                                52              01  D0 000FD 15$:    MOVL    #1, AT_LIBSIGNAL                        ; 4449
                60              06              00  0C 00100 16$:    PROBER  #0, #6, (USERS_PC)                      ; 4457
                                                43  13 00104         BEQL    19$                                     ;
                                17              60  91 00106         CMPB    (USERS_PC), #23                         ; 4460
                                                3E  12 00109         BNEQ    19$                                     ;
                        FF      8F      01      A0  91 0010B         CMPB    1(USERS_PC), #255                       ; 4461
                                                37  12 00110         BNEQ    19$                                     ;
                        04      AE      02      A0  D0 00112         MOVL    2(USERS_PC), ADDRESS                    ; 4469
                                50      04      AE  C0 00117         ADDL2   ADDRESS, R0                             ; 4470
                        04      AE      06      A0  9E 0011B         MOVAB   6(R0), ADDRESS                          ;
            04  BE              04              00  0C 00120         PROBER  #0, #4, @ADDRESS                        ; 4473
                                                05  13 00125         BEQL    17$                                     ;
                        04      AE      04      BE  D0 00127         MOVL    @ADDRESS, ADDRESS                       ; 4475
                                50 00000000G    00  9E 0012C 17$:    MOVAB   LIB$SIGNAL+2, R0                        ; 4477
                                50      04      AE  D1 00133         CMPL    ADDRESS, R0                             ;
                                                0D  13 00137         BEQL    18$                                     ;
                                50 00000000G    00  9E 00139         MOVAB   LIB$STOP+2, R0                          ; 4478
                                50      04      AE  D1 00140         CMPL    ADDRESS, R0                             ;
                                                03  12 00144         BNEQ    19$                                     ;
                                52              01  D0 00146 18$:    MOVL    #1, AT_LIBSIGNAL                        ; 4480
                                2D              52  E9 00149 19$:    BLBC    AT_LIBSIGNAL, 21$                       ; 4484
                                50      10      AA  D0 0014C         MOVL    16(USERS_FP), RET_PC                    ; 4494
                        19      A6              04  88 00150         BISB2   #4, 25(R6)                              ; 4495
                        01      A9              01  90 00154         MOVB    #1, 1(R9)                               ; 4496
                        02      A9      1B      A6  90 00158         MOVB    27(R6), 2(R9)                           ; 4497
                                                04  12 0015D         BNEQ    20$                                     ;
                        02      A9              08  90 0015F         MOVB    #8, 2(R9)                               ; 4500
                        2C      A6              50  D0 00163 20$:    MOVL    RET_PC, 44(R6)                          ; 4501
                        30      A6              60  90 00167         MOVB    (RET_PC), 48(R6)                        ; 4502
                        08      AE              03  D0 0016B         MOVL    #3, OP                                  ; 4503
                                                01  DD 0016F         PUSHL   #1                                      ;
                                        0C      AE  9F 00171         PUSHAB  OP                                      ;
                                                50  DD 00174         PUSHL   RET_PC                                  ;
                                            FF03    31 00176         BRW     6$                                      ;
                                                56  DD 00179 21$:    PUSHL   R6                                      ; 4514
                    0000V       CF              01  FB 0017B         CALLS   #1, MATCH_RIGHT_CALL_FRAME              ;
                                5A      24      A6  D0 00180         MOVL    36(R6), USERS_FP                        ; 4515
                        05      AA      80      8F  88 00184         BISB2   #128, 5(USERS_FP)                       ; 4516
                                                04  00 00189         RET                                             ; 4393
                                58      2C      A6  D0 0018A 22$:    MOVL    44(R6), EVENT_ADDRESS                   ; 4528
                        30      A6              68  90 0018E         MOVB    (EVENT_ADDRESS), 48(R6)                 ; 4534
                                6B              58  D1 00192         CMPL    EVENT_ADDRESS, DBG$RUNFRAME+64          ; 4542
                                                41  12 00195         BNEQ    25$                                     ;
                                                10  DD 00197         PUSHL   #16                                     ; 4553
                00000000G       00              01  FB 00199         CALLS   #1, DBG$GET_MEMORY                      ;
                                57              50  D0 001A0         MOVL    R0, IGNOR_ENTRY                         ;
                00000000'       EF              67  0E 001A3         INSQUE  (IGNOR_ENTRY), EVENT$CMD_QUEUE          ; 4554
                                50      14      A7  9E 001AA         MOVAB   20(IGNOR_ENTRY), R0                     ; 4567
                                52      04      AC  D0 001AE         MOVL    EVENT, R2                               ; 4565
        05          17          A2              05  E1 001B2         BBC     #5, 23(R2), 23$                         ;
```

```
                        60              04  90 001B7          MOVB    #4, (R0)                        ; 4567
                                        03  11 001BA          BRB     24$                             ;
                        60              05  90 001BC 27$:     MOVB    #5, (R0)                        ; 4569
                     01 A0      0400    8F  B0 001BF 24$:     MOVW    #1024, 1(R0)                    ; 4571
                     03 A0              04  88 001C5          BISB2   #4, 3(R0)                       ; 4573
                                        52  DD 001C9          PUSHL   R2                              ; 4574
                                        57  DD 001CB          PUSHL   IGNOR_ENTRY                     ;
                  0000V CF              02  FB 001CD          CALLS   #2, INSQUE1                     ;
75                   17 A2              05  E1 001D2          BBC     #5, 23(R2), 32$                 ; 4580
                                        04  001D7          RET                                     ; 4583
                        50      04  AC  D0  001D8 25$:     MOVL    EVENT, R0                       ; 4594
                        03      30  A0  91  001DC          CMPB    48(R0), #3                      ;
                                    01  12  001E0          BNEQ    26$                             ;
                                        04  001E2          RET                                     ;
                     0C AE              03  D0  001E3 26$:     MOVL    #3, OP                          ; 4596
                                        01  DD  001E7          PUSHL   #1                              ;
                                10  AE  9F  001E9          PUSHAB  OP                              ;
                                        58  DD  001EC          PUSHL   EVENT_ADDRESS                   ;
                00000000G       00      03  FB  001EE          CALLS   #3, DBG$WRITE_MEM               ;
                                01      50  E9  001F5          BLBC    R0, 27$                         ;
                                        04  001F8          RET                                     ;
                            000284B4    8F  DD  001F9 27$:     PUSHL   #165044                         ; 4599
                00000000G       00      01  FB  001FF          CALLS   #1, LIB$SIGNAL                  ;
                                        04  00206          RET                                     ; 4598
                        51              6B  D0  00207 28$:     MOVL    DBG$RUNFRAME+64, R1             ; 4611
                        50              61  9A  0020A          MOVZBL  (R1), OPCODE                    ;
                        52      18      A6  9E  0020D          MOVAB   24(R6), R2                      ; 4614
03                      62              03  E0  00211          BBS     #3, (R2), 30$                   ;
                                    00BD    31  00215 29$:     BRW     39$                             ;
7C                      62              0A  E0  00218 30$:     BBS     #10, (R2), 37$                  ; 4615
F1 00000000'            EF              50  E1  0021C          BBC     OPCODE, DBG$OPCODES_STEP_OVER, 29$ ;
70                      62              0A  E0  00224          BBS     #10, (R2), 37$                  ; 4621
   000000FA             8F              50  D1  00228          CMPL    OPCODE, #250                    ; 4624
                                        09  13  0022F          BEQL    31$                             ;
   000000FB             8F              50  D1  00231          CMPL    OPCODE, #251                    ;
                                        1E  12  00238          BNEQ    33$                             ;
                     01 A2              04  88  0023A 31$:     BISB2   #4, 1(R2)                       ; 4636
                           24   A6      D4  0023E              CLRL    36(R6)                          ; 4637
                     03 A2      02   A9  90  00241              MOVB    2(R9), 3(R2)                    ; 4639
                     01 A9      0400 8F  B0  00246              MOVW    #1024, 1(R9)                    ; 4638
                     04 AB              10  88  0024C 32$:     BISB2   #16, DBG$RUNFRAME+68            ; 4641
   00000000G         00                 04  88  00250          BISB2   #4, DBG$GV_CONTROL+1            ; 4642
                                        04  00257          RET                                     ; 4626
                                        7E  7C  00258 33$:     CLRQ    -(SP)                           ; 4651
                                        51  DD  0025A          PUSHL   R1                              ; 4652
   00000000G         00                 03  FB  0025C          CALLS   #3, DBG$INS_DECODE              ;
                                        50  D0  00263          MOVL    R0, EVENT_ADDRESS               ;
   40000000          8F                58  D1  00266          CMPL    EVENT_ADDRESS, #1073741824      ; 4657
                                        04  1E  0026D          BGEQU   34$                             ;
                                        58  D5  0026F          TSTL    EVENT_ADDRESS                   ; 4658
                                        1B  12  00271          BNEQ    36$                             ;
                                        62  95  00273 34$:     TSTB    (R2)                            ; 4671
                                        04  19  00275          BLSS    35$                             ;
                                        58  D5  00277          TSTL    EVENT_ADDRESS                   ; 4672
                                        5E  12  00279          BNEG    40$                             ;
                                        6B  DD  0027B 35$:     PUSHL   DBG$RUNFRAME+64                 ; 4674
                                        01  DD  0027D          PUSHL   #1                              ;
```

```
                    00028063   8F  DD 0027F          PUSHL   #163939                                    ;
00000000G   00                 03  FB 00285          CALLS   #3, LIB$SIGNAL                           ;
                               4B  11 0028C          BRB     40$                                      ; 4679
      2C    A6                 58  D0 0028E 36$:     MOVL    EVENT_ADDRESS, 44(R6)                    ; 4689
      01    A2                 04  88 00292          BISB2   #4, 1(R2)                                ; 4694
                               04  11 00296          BRB     38$                                      ; 4621
            58          2C     A6  D0 00298 37$:     MOVL    44(R6), EVENT_ADDRESS                    ; 4703
      30    A6                 68  90 0029C 38$:     MOVB    (EVENT_ADDRESS), 48(R6)                  ; 4715
            03          30     A6  91 002A0          CMPB    48(R6), #3                               ; 4722
                               37  13 002A4          BEQL    41$                                      ;
      10    AE                 03  D0 002A6          MOVL    #3, OP                                   ; 4724
                               01  DD 002AA          PUSHL   #1                                       ;
                          14   AE  9F 002AC          PUSHAB  OP                                       ;
                               58  DD 002AF          PUSHL   EVENT_ADDRESS                            ;
00000000G   00                 03  FB 002B1          CALLS   #3, DBG$WRITE_MEM                        ;
            22                 50  E8 002B8          BLBS    R0, 41$                                  ;
                               6B  DD 002BB          PUSHL   DBG$RUNFRAME+64                          ; 4727
                               01  DD 002BD          PUSHL   #1                                       ;
                    00028063   8F  DD 002BF          PUSHL   #163939                                  ;
00000000G   00                 03  FB 002C5          CALLS   #3, LIB$SIGNAL                           ;
      04    AB                 10  88 002CC          BISB2   #16, DBG$RUNFRAME+68                     ; 4728
      01    A2                 04  8A 002D0          BICB2   #4, 1(R2)                                ; 4729
                               04  D4 002D4          RET                                              ; 4726
      01    A2                 04  8A 002D5 39$:     BICB2   #4, 1(R2)                                ; 4739
      04    AB                 10  88 002D9 40$:     BISB2   #16, DBG$RUNFRAME+68                     ; 4740
                               04  DD 002DD 41$:     RET                                              ; 4748

; Routine Size:  734 bytes,    Routine Base:  DBG$CODE + 1A4C
```

```
;4630       4749  1 GLOBAL ROUTINE DBG$DEACTIVATE_EVENTS: NOVALUE =
;4631       4750  1 !
;4632       4751  1 ! FUNCTION
;4633       4752  1 !       This routine deactivates all set events.
;4634       4753  1 !
;4635       4754  1 ! INPUTS
;4636       4755  1 !       NONE
;4637       4756  1 !
;4638       4757  1 ! OUTPUTS
;4639       4758  1 !       The events are deactivated, including the resetting of breakpoints, the
;4640       4759  1 !       resetting of protections, etc.
;4641       4760  1 !
;4642       4761  1
;4643       4762  2     BEGIN
;4644       4763  2
;4645       4764  2     LOCAL
;4646       4765  2         EVENT_ENTRY :   REF EVENT$EVENT_DESCRIPTOR, ! Event entry pointer
;4647       4766  2         PAGE_ENTRY  :   REF EVENT$PAGE_DESCRIPTOR;  ! Page entry pointer
;4648       4767  2
;4649       4768  2
;4650       4769  2     ! As long as were not skipping ACCVIO's, for each entry in the page
;4651       4770  2     ! queue, un-write protect the page described.
;4652       4771  2     !
;4653       4772  2     IF NOT .SKIP_ACCVIOS
;4654       4773  2     THEN
;4655       4774  3         BEGIN
;4656       4775  3         PAGE_ENTRY = .EVENT$PAGE_QUEUE [L_QUEUE_FLINK];
;4657       4776  3         WHILE .PAGE_ENTRY NEQA EVENT$PAGE_QUEUE DO
;4658       4777  4             BEGIN
;4659       4778  4             LOCAL
;4660       4779  4                 ADDRESS :       VECTOR [2];     ! Address range for protect
;4661       4780  4
;4662       4781  4             ADDRESS [0] = .PAGE_ENTRY [EVENT$L_PAGE_ADDRESS];
;4663       4782  4             ADDRESS [1] = .PAGE_ENTRY [EVENT$L_PAGE_ADDRESS];
;4664     P 4783  4             IF NOT $SETPRT (INADR       = ADDRESS,
;4665     P 4784  4                             PROT        = .PAGE_ENTRY [EVENT$B_PAGE_PROTECTION]
;4666       4785  5                            )
;4667       4786  4             THEN
;4668       4787  4                 SIGNAL (DBG$_NOWPROT)
;4669       4788  4             ELSE
;4670       4789  4                 PAGE_ENTRY = .PAGE_ENTRY [EVENT$L_PAGE_FLINK];
;4671       4790  3             END;
;4672       4791  2         END;
;4673       4792  2
;4674       4793  2
;4675       4794  2     ! Deactivate the all events not 'deleted'.
;4676       4795  2     !
;4677       4796  2     EVENT_ENTRY = .EVENT$CMD_QUEUE [L_QUEUE_FLINK];
;4678       4797  2     WHILE .EVENT_ENTRY NEQA EVENT$CMD_QUEUE [A_QUEUE_ENTRY] DO
;4679       4798  3         BEGIN
;4680       4799  3         IF NOT .EVENT_ENTRY [EVENT$V_DELETED]
;4681       4800  3         THEN
;4682       4801  3             DBG$DEACTIVATE_EVENT (.EVENT_ENTRY);
;4683       4802  3         EVENT_ENTRY = .EVENT_ENTRY [EVENT$L_CMD_FLINK];
;4684       4803  2         END;
;4685       4804  1     END;
```

```
                          000C 00000          .ENTRY  DBG$DEACTIVATE_EVENTS, Save R2,R3       ; 4749
                53 00000000'  EF   9E 00002   MOVAB   EVENT$PAGE_QUEUE, R3                    ;
                5E            08   C2 00009   SUBL2   #8, SP                                  ;
                3D 00000000'  EF   E8 0000C   BLBS    SKIP_ACCVIOS, 3$                        ; 4772
                52            63   D0 00013   MOVL    EVENT$PAGE_QUEUE, PAGE_ENTRY            ; 4775
                50            63   9E 00016 1$:  MOVAB   EVENT$PAGE_QUEUE, R0                ; 4776
                50            52   D1 00019   CMPL    PAGE_ENTRY, R0                          ;
                              32   13 0001C   BEQL    3$                                      ;
                6E      08    A2   D0 0001E   MOVL    8(PAGE_ENTRY), ADDRESS                  ; 4781
             04 AE      08    A2   D0 00022   MOVL    8(PAGE_ENTRY), ADDRESS+4                ; 4782
                            7E   D4 00027   CLRL    -(SP)                                   ; 4785
                7E      0E    A2   9A 00029   MOVZBL  14(PAGE_ENTRY), -(SP)                   ;
                            7E   7C 0002D   CLRQ    -(SP)                                   ;
                      10    AE   9F 0002F   PUSHAB  ADDRESS                                 ;
00000000G       00          05   FB 00032   CALLS   #5, SYS$SETPRT                          ;
                0F          50   E8 00039   BLBS    R0, 2$                                  ;
                   000284C4 8F   DD 0003C   PUSHL   #165060                                 ; 4787
00000000G       00          01   FB 00042   CALLS   #1, LIB$SIGNAL                         ;
                            CB   11 00049   BRB     1$                                      ;
                52            62   D0 0004B 2$:  MOVL    (PAGE_ENTRY), PAGE_ENTRY          ; 4789
                            C6   11 0004E   BRB     1$                                      ; 4776
                52      D0    A3   D0 00050 3$:  MOVL    EVENT$CMD_QUEUE, EVENT_ENTRY        ; 4796
                50      D0    A3   9E 00054 4$:  MOVAB   EVENT$CMD_QUEUE, R0                 ; 4797
                50            52   D1 00058   CMPL    EVENT_ENTRY, R0                         ;
                              11   13 0005B   BEQL    6$                                      ;
                      17    A2   95 0005D   TSTB    23(EVENT_ENTRY)                         ; 4799
                            07   19 00060   BLSS    5$                                      ;
                            52   DD 00062   PUSHL   EVENT_ENTRY                             ; 4801
             0000V  CF           01   FB 00064   CALLS   #1, DBG$DEACTIVATE_EVENT           ;
                52            62   D0 00069 5$:  MOVL    (EVENT_ENTRY), EVENT_ENTRY        ; 4802
                            E6   11 0006C   BRB     4$                                      ; 4797
                                 04 0006E 6$:  RET                                         ; 4804

; Routine Size:  111 bytes,    Routine Base:  DBG$CODE + 1D2A
```

```
;4687     4805  1 GLOBAL ROUTINE DBG$DEACTIVATE_EVENT(EVENT_ENTRY): NOVALUE =
;4688     4806  1 !
;4689     4807  1 ! FUNCTION
;4690     4808  1 !       This routine deactivates an event.
;4691     4809  1 !
;4692     4810  1 ! INPUTS
;4693     4811  1 !       EVENT_ENTRY :           Pointer to an event entry.
;4694     4812  1 !
;4695     4813  1 ! OUTPUTS
;4696     4814  1 !       The event is deactivated, including the resetting of breakpoints, the
;4697     4815  1 !       resetting of protections, etc.
;4698     4816  1 !
;4699     4817  1
;4700     4818  2     BEGIN
;4701     4819  2
;4702     4820  2     MAP
;4703     4821  2         EVENT_ENTRY :   REF EVENT$EVENT_DESCRIPTOR; ! Event entry pointer
;4704     4822  2
;4705     4823  2     LOCAL
;4706     4824  2         EVENT_ADDRESS : REF VECTOR [, BYTE],        ! Event byte address
;4707     4825  2         USERS_FP :      REF BLOCK [, BYTE],         ! User's current FP
;4708     4826  2         STATUS;                                     ! Status value
;4709     4827  2
;4710     4828  2
;4711     4829  2     ! If this is an IGNOR entry, ignore it !
;4712     4830  2     !
;4713     4831  2     IF .EVENT_ENTRY [EVENT$B_CMD_TYPE] EQLU EVENT$K_TYPE_IGNOR
;4714     4832  2     THEN
;4715     4833  2         RETURN;
;4716     4834  2
;4717     4835  2
;4718     4836  2     ! Case on the kind of event entry, to determine whether how to activate
;4719     4837  2     ! the entry.
;4720     4838  2     !
;4721     4839  2     CASE .EVENT_ENTRY [EVENT$B_CMD_KIND]
;4722     4840  2     FROM EVENT$K_KIND_ACC TO EVENT$K_KIND_EXC OF
;4723     4841  2         SET
;4724     4842  2         [EVENT$K_KIND_ACC]:
;4725     4843  2
;4726     4844  2
;4727     4845  2             ! Case on the access sub-kind....
;4728     4846  2             !
;4729     4847  2             CASE .EVENT_ENTRY [EVENT$B_SUB_KIND]
;4730     4848  2             FROM EVENT$K_ACC_READ TO EVENT$K_ACC_RTRN OF
;4731     4849  2                 SET
;4732     4850  2
;4733     4851  2
;4734     4852  2                 [EVENT$K_ACC_READ]:
;4735     4853  2                     ;
;4736     4854  2
;4737     4855  2
;4738     4856  2                 [EVENT$K_ACC_WRIT]:
;4739     4857  2                     ;
;4740     4858  2
;4741     4859  2
;4742     4860  2                 [EVENT$K_ACC_MDFY]:
;4743     4861  2                     ;
```

```
;  4744          4862  2
;  4745          4863  2
;  4746          4864  2                ! Execution Access means that we've got to replace a BPT
;  4747          4865  2                ! instruction at the address indicated.
;  4748          4866  2                !
;  4749          4867  2                [EVENT$K_ACC_EXEC]:
;  4750          4868  3                    BEGIN
;  4751          4869  3
;  4752          4870  3
;  4753          4871  3                    ! Get the event's address.
;  4754          4872  3                    !
;  4755          4873  3                    EVENT_ADDRESS = .EVENT_ENTRY [EVENT$L_ADDRESS];
;  4756          4874  3
;  4757          4875  3
;  4758          4876  3                    ! Finally, overwrite the BPT instruction with the original
;  4759          4877  3                    ! opcode into that address.  Note that we will NOT do this
;  4760          4878  3                    ! if the orignal is a BPT.
;  4761          4879  3                    !
;  4762          4880  3                    IF .EVENT_ENTRY [EVENT$B_OPCODE] NEQU BPT_INSTRUCTION
;  4763          4881  3                    THEN
;  4764        P 4882  3                        IF NOT WRITE_OPCODE (.EVENT_ADDRESS,
;  4765        P 4883  3                                             .EVENT_ENTRY [EVENT$B_OPCODE]
;  4766          4884  4                                            )
;  4767          4885  3                        THEN
;  4768          4886  4                            BEGIN
;  4769          4887  4                            SIGNAL (DBG$_NOWOPCO);
;  4770          4888  4                            RETURN;
;  4771          4889  3                            END;
;  4772          4890  2                    END;
;  4773          4891  2
;  4774          4892  2
;  4775          4893  2                ! Return Access means that we've got to replace a BPT
;  4776          4894  2                ! instruction at the address indicated - or, if this
;  4777          4895  2                ! is was a STEP command, turn of the dirty bit in the
;  4778          4896  2                ! user's PSW.
;  4779          4897  2                !
;  4780          4898  2                [EVENT$K_ACC_RTRN]:
;  4781          4899  3                    BEGIN
;  4782          4900  3                    IF .EVENT_ENTRY [EVENT$B_CMD_TYPE] EQLU
;  4783          4901  3                        EVENT$K_TYPE_SSINT
;  4784          4902  3                    THEN
;  4785          4903  4                        BEGIN
;  4786          4904  4                        LOCAL BIT_15_CNT: REF VECTOR[,BYTE];
;  4787          4905  4                        BIT_15_CNT = .EVENT_ENTRY [EVENT$L_FP_RET_CNT];
;  4788          4906  4                        IF .BIT_15_CNT[0] GEQ 1 THEN DBG$GB_SET_WATCH_FLAG = TRUE;
;  4789          4907  3                        END;
;  4790          4908  3
;  4791          4909  3
;  4792          4910  3                    ! Depending on whether this was a STEP command or not...
;  4793          4911  3                    !
;  4794          4912  4                    IF (.EVENT_ENTRY [EVENT$B_CMD_TYPE] EQLU
;  4795          4913  4                        EVENT$K_TYPE_STEPS
;  4796          4914  3                       ) OR
;  4797          4915  4                       (.EVENT_ENTRY [EVENT$B_CMD_TYPE] EQLU
;  4798          4916  4                        EVENT$K_TYPE_SKIPS
;  4799          4917  3                       ) OR
;  4800          4918  4                       (.EVENT_ENTRY [EVENT$B_CMD_TYPE] EQLU
```

```
;  4801          4919  4                EVENT$K_TYPE_SSINT
;  4802          4920  4              )
;  4803          4921  3            THEN
;  4804          4922  4                BEGIN
;  4805          4923  4
;  4806          4924  4
;  4807          4925  4                ! Turn off bit 15 in the user's
;  4808          4926  4                ! runframe so we don't get another
;  4809          4927  4                ! ROPRAND fault on the return.
;  4810          4928  4                !
;  4811          4929  4                USERS_FP = .EVENT_ENTRY [EVENT$L_USERS_FP];
;  4812          4930  4                IF .USERS_FP NEQ 0
;  4813          4931  4                THEN
;  4814          4932  5                    BEGIN
;  4815          4933  5                    MATCH_RIGHT_CALL_FRAME(.EVENT_ENTRY);
;  4816          4934  5                    USERS_FP = .EVENT_ENTRY [EVENT$L_USERS_FP];
;  4817          4935  5                    (USERS_FP [SF$W_SAVE_PSW])<15,1,0> = FALSE;
;  4818          4936  4                    END;
;  4819          4937  4                END
;  4820          4938  3            ELSE
;  4821          4939  4                BEGIN
;  4822          4940  4
;  4823          4941  4                ! Get the event's address.
;  4824          4942  4                !
;  4825          4943  4                EVENT_ADDRESS = .EVENT_ENTRY [EVENT$L_ADDRESS];
;  4826          4944  4
;  4827          4945  4
;  4828          4946  4                ! Finally, overwrite the BPT instruction with the
;  4829          4947  4                ! original opcode into that address.  Note that we
;  4830          4948  4                ! will NOT do this if the orignal is a BPT.
;  4831          4949  4                !
;  4832          4950  4                IF .EVENT_ENTRY [EVENT$B_OPCODE] NEQU BPT_INSTRUCTION
;  4833          4951  4                THEN
;  4834          4952  4                    IF NOT WRITE_OPCODE (.EVENT_ADDRESS,
;  4835        P 4953  4                                         .EVENT_ENTRY [EVENT$B_OPCODE]
;  4836        P 4954  4                                        )
;  4837          4955  5                    THEN
;  4838          4956  4                        BEGIN
;  4839          4957  5                        SIGNAL (DBG$_NOWOPCO);
;  4840          4958  5                        RETURN;
;  4841          4959  5                        END;
;  4842          4960  4                END;
;  4843          4961  3                END;
;  4844          4962  2            TES;
;  4845          4963  2
;  4846          4964  2
;  4847          4965  2
;  4848          4966  2        [EVENT$K_KIND_INS]:
;  4849          4967  3            BEGIN
;  4850          4968  3
;  4851          4969  3
;  4852          4970  3            ! If this step was stepping over (had a BPT set), remove the
;  4853          4971  3            ! BPT instruction.
;  4854          4972  3            !
;  4855          4973  3            IF .EVENT_ENTRY [EVENT$V_STEP_OVER] AND
;  4856          4974  3               .EVENT_ENTRY [EVENT$V_STEP_BPT]
;  4857          4975  3            THEN
```

```
;  4858          4976  4                BEGIN
;  4859          4977  4
;  4860          4978  4
;  4861          4979  4                ! Get the event's address.
;  4862          4980  4                !
;  4863          4981  4                EVENT_ADDRESS = .EVENT_ENTRY [EVENT$L_ADDRESS];
;  4864          4982  4
;  4865          4983  4
;  4866          4984  4                ! Finally, overwrite the BPT instruction with the original
;  4867          4985  4                ! opcode into that address.  Note that we will NOT do this
;  4868          4986  4                ! if the orignal is a BPT.
;  4869          4987  4                !
;  4870          4988  4                IF .EVENT_ENTRY [EVENT$B_OPCODE] NEQU BPT_INSTRUCTION
;  4871          4989  4                THEN
;  4872        P 4990  4                    IF NOT WRITE_OPCODE (.EVENT_ADDRESS,
;  4873        P 4991  4                                         .EVENT_ENTRY [EVENT$B_OPCODE]
;  4874          4992  5                                        )
;  4875          4993  4                    THEN
;  4876          4994  5                        BEGIN
;  4877          4995  5                        SIGNAL (DBG$_NOWOPCO);
;  4878          4996  5                        RETURN;
;  4879          4997  4                        END;
;  4880          4998  3                END;
;  4881          4999  2            END;
;  4882          5000  2
;  4883          5001  2
;  4884          5002  2        [EVENT$K_KIND_EXC]:
;  4885          5003  2            ;
;  4886          5004  2        TES;
;  4887          5005  1    END;


                                  003C 00000          .ENTRY  DBG$DEACTIVATE_EVENT, Save R2,R3,R4,R5      ; 4805
                            55 00000000G   00  9E 00002       MOVAB   DBG$WRITE_MEM, R5                   ;
                            5E             0C  C2 00009       SUBL2   #12, SP                             ;
                            52       04    AC  D0 0000C       MOVL    EVENT_ENTRY, R2                     ; 4831
                            05       14    A2  91 00010       CMPB    20(R2), #5                          ;
                                           7E  13 00014       BEQL    10$                                 ;
                      02          00       15  A2 8F 00016       CASEB   21(R2), #0, #2                      ; 4839
                    00BA        0087           0006  0001B 1$:  .WORD   2$-1$,-                             ;
                                                                11$-1$,-                                    ;
                                                                14$-1$                                      ;
                      04          00       16  A2 8F 00021 2$:  CASEB   22(R2), #0, #4                      ; 4847
                0008  00AF        00AF           00AF  00026 3$:  .WORD   14$-3$,-                           ;
                                                 0027  0002E              14$-3$,-                           ;
                                                                14$-3$,-                                    ;
                                                                4$-3$,-                                     ;
                                                                6$-3$                                       ;
                                  04 00030          RET                                                   ;
                            54       2C    A2  D0 00031 4$:  MOVL    44(R2), EVENT_ADDRESS               ; 4873
                            03       30    A2  91 00035      CMPB    48(R2), #3                          ; 4880
                                           79  13 00039      BEQL    12$                                 ;
                            6E       30    A2  9A 0003B      MOVZBL  48(R2), OP                          ; 4884
                                           01  DD 0003F      PUSHL   #1                                  ;
```

```
                         04   AE  9F 00041          PUSHAB  OP                                  ;
                              54  DD 00044 5$:       PUSHL   EVENT_ADDRESS                       ;
                         65       03  FB 00046      CALLS   #3, DBG$WRITE_MEM                   ;
                         7C       50  E9 00049      BLBC    R0, 13$                             ;
                                  04  00004C        RET                                         ; 4887
                              51  D4 00004D 6$:       CLRL    R1                                  ; 4900
                         06   14  A2  91 0004F      CMPB    20(R2), #6                          ;
                                  11  12 00053      BNEQ    7$                                  ;
                              51  D6 00055          INCL    R1                                  ;
                         50   2C  A2  D0 00057      MOVL    44(R2), BIT_15_CNT                  ; 4905
                              60  95 0005B          TSTB    (BIT_15_CNT)                        ; 4906
                              07  13 0005D          BEQL    7$                                  ;
                00000000'     EF  01  90 0005F      MOVB    #1, DBG$GB_SET_WATCH_FLAG           ;
                         03   14  A2  91 00066 7$:    CMPB    20(R2), #3                          ; 4912
                              09  13 0006A          BEQL    8$                                  ;
                         04   14  A2  91 0006C      CMPB    20(R2), #4                          ; 4915
                              03  13 00070          BEQL    8$                                  ;
                         17       51  E9 00072      BLBC    R1, 9$                              ; 4918
                         53   24  A2  D0 00075 8$:    MOVL    36(R2), USERS_FP                    ; 4929
                              5A  13 00079          BEQL    14$                                 ; 4930
                              52  DD 0007B          PUSHL   R2                                  ; 4933
                    0000V     CF  01  FB 0007D      CALLS   #1, MATCH_RIGHT_CALL_FRAME          ;
                         53   24  A2  D0 00082      MOVL    36(R2), USERS_FP                    ; 4934
                       05    A3  80  8F  8A 00086    BICB2   #128, 5(USERS_FP)                   ; 4935
                                  04  00008B        RET                                         ; 4912
                         54   2C  A2  D0 0008C 9$:    MOVL    44(R2), EVENT_ADDRESS               ; 4944
                         03   3C  A2  91 00090      CMPB    48(R2), #3                          ; 4951
                                  3F  13 00094 10$:    BEQL    14$                                 ;
                    04   AE   30  A2  9A 00096      MOVZBL  48(R2), OP                          ; 4955
                              01  DD 0009B          PUSHL   #1                                  ;
                              08  AE 9F 0009D       PUSHAB  OP                                  ;
                                  A2  11 000A0      BRB     5$                                  ;
                    2E        18  A2      03  E1 000A2 11$:    BBC     #3, 24(R2), 14$             ; 4973
                    29        19  A2      02  E1 000A7      BBC     #2, 25(R2), 14$             ; 4974
                         54       2C  A2  D0 000AC      MOVL    44(R2), EVENT_ADDRESS               ; 4981
                         03       30  A2  91 000B0      CMPB    48(R2), #3                          ; 4988
                                      1F  13 000B4 12$:    BEQL    14$                                 ;
                    08   AE       30  A2  9A 000B6      MOVZBL  48(R2), OP                          ; 4992
                                  01  DD 000BB          PUSHL   #1                                  ;
                                  0C  AE 9F 000BD       PUSHAB  OP                                  ;
                                  54  DD 000C0          PUSHL   EVENT_ADDRESS                       ;
                         65           03  FB 000C2      CALLS   #3, DBG$WRITE_MEM                   ;
                         0D           50  E8 000C5      BLBS    R0, 14$                             ;
                              000284BC    8F  DD 000C8 13$:    PUSHL   #165052                     ; 4995
                00000000G     00          01  FB 000CE      CALLS   #1, LIB$SIGNAL                  ;
                                          04  000D5 14$:    RET                                 ; 5005

; Routine Size:  214 bytes,    Routine Base:  DBG$CODE + 1D99
```

```
;4889        5006  1 GLOBAL ROUTINE DBG$EXCEPTION_HANDLER(SIGNAL_ARG_PTR, MECHAN_ARG_PTR) =
;4890        5007  1 !
;4891        5008  1 ! FUNCTIONAL DESCRIPTION:
;4892        5009  1 !
;4893        5010  1 !       Exception analyzer called by the primary vector exception handler,
;4894        5011  1 !       which is a MARS routine found in DBGSTART.MAR.  The MARS routine
;4895        5012  1 !       immediately resignals if the user program was not running.  Otherwise
;4896        5013  1 !       it saves the registers of the user program and disables ASTs for the
;4897        5014  1 !       time that DEBUG is running.
;4898        5015  1 !
;4899        5016  1 !       Then it calls this routine, where the exception is analyzed for the
;4900        5017  1 !       type of exception.  Breakpoint, trace, and ACCVIO traps are given
;4901        5018  1 !       special handling, which usually ends with control being passed to the
;4902        5019  1 !       user.  If the breakpoint, trace, or ACCVIO trap was illegal, then the
;4903        5020  1 !       exception is resignaled unless the user has asked for control on every
;4904        5021  1 !       exception.
;4905        5022  1 !
;4906        5023  1 !       Some trace traps cause an interim halt that requires some action, but
;4907        5024  1 !       doesn't pass control back to the user.  After checking the validity of
;4908        5025  1 !       these trace traps, the value SS$_CONTINUE is returned.
;4909        5026  1 !
;4910        5027  1 !       After the exception is analyzed and it is determined that immediate
;4911        5028  1 !       resignaling or continuing is not desired, the user_proc routine is
;4912        5029  1 !       called.  This routine accepts user commands either from prespecified
;4913        5030  1 !       action commands from breakpoints, or interactively from the terminal.
;4914        5031  1 !       Eventually, a command is given that either causes the user program to
;4915        5032  1 !       continue or DEBUG to exit. If the user program is to continue, the
;4916        5033  1 !       value returned from user_proc is SS$_CONTINUE, and that value is
;4917        5034  1 !       passed back to the MARS handler.
;4918        5035  1 !
;4919        5036  1 !       If an exception occurs during DEBUG processing, the exception handler
;4920        5037  1 !       is FINAL_HANDL, not this routine.
;4921        5038  1 !
;4922        5039  1 !
;4923        5040  1 ! FORMAL PARAMETERS:
;4924        5041  1 !
;4925        5042  1 !       SIGNAL_ARG_PTR  - address of block that contains at least four
;4926        5043  1 !                         longwords.  The pertinent words are the exception
;4927        5044  1 !                         name, the PC at the time of the exception, and the PSL
;4928        5045  1 !                         at the time of the exception.  The name is always the
;4929        5046  1 !                         second longword, the PC and the PSL the next to last
;4930        5047  1 !                         and last respectively.
;4931        5048  1 !
;4932        5049  1 !       MECHAN_ARG_PTR  - address of block that contains five longwords.  The
;4933        5050  1 !                         pertinent words are the saved R0 and R1.  They are in
;4934        5051  1 !                         the fourth and fifth longwords respectively.  Neither
;4935        5052  1 !                         is used at this time.
;4936        5053  1 !
;4937        5054  1 !
;4938        5055  1 ! IMPLICIT INPUTS:
;4939        5056  1 !
;4940        5057  1 !       Some variable number of additional arguments may exist between the
;4941        5058  1 !       exception name and the PC.  Flags indicating the validity of TBITs and
;4942        5059  1 !       breakpoints are referenced.  The flag DBG$GB_RESIGNAL causes illegal
;4943        5060  1 !       exceptions to be resignaled if the flag is set to true.
;4944        5061  1 !
;4945        5062  1 !
```

```
;  4946          5063  1 ! IMPLICIT OUTPUTS:
;  4947          5064  1 !
;  4948          5065  1 !       The TBIT in the RUNFRAME PSL may be changed.
;  4949          5066  1 !
;  4950          5067  1 !
;  4951          5068  1 ! ROUTINE VALUE:
;  4952          5069  1 !
;  4953          5070  1 !       SS$_RESIGNAL or SS$_CONTINUE for resignaling and continuing
;  4954          5071  1 !       respectively.
;  4955          5072  1 !
;  4956          5073  1 !
;  4957          5074  1 ! SIDE EFFECTS:
;  4958          5075  1 !
;  4959          5076  1 !       Any number of things.
;  4960          5077  1 !
;  4961          5078  2     BEGIN
;  4962          5079  2     MAP
;  4963          5080  2         MECHAN_ARG_PTR : REF BLOCK[,BYTE],
;  4964          5081  2         SIGNAL_ARG_PTR : REF BLOCK[,BYTE];
;  4965          5082  2     BUILTIN PROBER;
;  4966          5083  2     LABEL scan;
;  4967          5084  2     LOCAL
;  4968          5085  2         EVENT :          REF EVENT$EVENT_DESCRIPTOR, ! Event entry pointer
;  4969          5086  2         LAST1 :          REF EVENT$EVENT_DESCRIPTOR, ! Event entry pointer
;  4970          5087  2         SKIPS_ENTRY :    REF EVENT$EVENT_DESCRIPTOR, ! Skip entry pointer
;  4971          5088  2         ACTIVE_EVENT,                                ! Event match flag
;  4972          5089  2         EXCEPTION_TYPE,
;  4973          5090  2         USERS_PC :       REF BLOCK [, BYTE],
;  4974          5091  2         USERS_FP :       REF BLOCK [, BYTE],
;  4975          5092  2         OPCODE,
;  4976          5093  2         ORIG_TBIT,                                   ! Original TBIT value
;  4977          5094  2         STATUS;
;  4978          5095  2
;  4979          5096  2
;  4980          5097  2     ! Save the original value of the TBIT.
;  4981          5098  2     !
;  4982          5099  2     ORIG_TBIT = .DBG$RUNFRAME[DBG$V_TBIT];
;  4983          5100  2
;  4984          5101  2
;  4985          5102  2     ! Save the exception type (name);
;  4986          5103  2     !
;  4987          5104  2     EXCEPTION_TYPE = .SIGNAL_ARG_PTR [CHF$L_SIG_NAME];
;  4988          5105  2
;  4989          5106  2
;  4990          5107  2     ! Save the User's PC.
;  4991          5108  2     !
;  4992          5109  2     USERS_PC = .DBG$RUNFRAME [DBG$L_USER_PC];
;  4993          5110  2     IF NOT PROBER(%REF(0),%REF(1),.USERS_PC) THEN OPCODE = 0
;  4994          5111  4     ELSE IF (((OPCODE = .(.USERS_PC)<0,8,0>) GEQU %X'FD')
;  4995          5112  3                 AND PROBER(%REF(0),%REF(2),.USERS_PC))
;  4996          5113  2     THEN OPCODE = %X'100' + .(.USERS_PC)<8,8,0>;
;  4997          5114  2
;  4998          5115  2
;  4999          5116  2     ! If we got here via a TBIT, see if we're at one of the special DEBUG
;  5000          5117  2     ! locations.  If so, just return SS$_CONTINUE.
;  5001          5118  2     !
;  5002          5119  2     IF .EXCEPTION_TYPE EQLU SS$_TBIT
```

```
;  5003          5120  2     THEN
;  5004          5121  3         BEGIN
;  5005          5122  3         IF .USERS_PC EQLA DBG$PSEUDO_EXIT OR
;  5006          5123  3            .USERS_PC EQLA DBG$TERM_HANDLR OR
;  5007          5124  3            .USERS_PC EQLA DBG$USER_EXIT   OR
;  5008          5125  3            .USERS_PC EQLA PRIM_HANDL_2    OR
;  5009          5126  3            .USERS_PC EQLA DBG$PSEUDO_SSI
;  5010          5127  3         THEN
;  5011          5128  4             BEGIN
;  5012          5129  4             DBG$RUNFRAME [DBG$V_TBIT] = FALSE;
;  5013          5130  4             DBG$GL_OUTPRAB [RAB$V_CCO] = TRUE;
;  5014          5131  4             RETURN SS$_CONTINUE;
;  5015          5132  3             END;
;  5016          5133  3
;  5017          5134  2         END;
;  5018          5135  2
;  5019          5136  2
;  5020          5137  2     ! If we got here via an Opcode Request....
;  5021          5138  2     !
;  5022          5139  2     IF .EXCEPTION_TYPE EQLU SS$_DBGOPCREQ
;  5023          5140  2     THEN
;  5024          5141  3         BEGIN
;  5025          5142  3
;  5026          5143  3
;  5027          5144  3         ! This signal is generated by the library routine LIB$GET_OPCODE.
;  5028          5145  3         ! It is used to inquire what the real instruction was before the
;  5029          5146  3         ! debugger replaced the instruction with a BPT.
;  5030          5147  3         !
;  5031          5148  3         ! (The emulator needs this capability).
;  5032          5149  3         !
;  5033          5150  3         ! Note that the opcode involved was restored when we deactivated
;  5034          5151  3         ! the events.  This will have to be redone when we stop
;  5035          5152  3         ! automatically deactivating....
;  5036          5153  3         !
;  5037          5154  3         DBG$DEACTIVATE_EVENTS();
;  5038          5155  3         (.SIGNAL_ARG_PTR [12,0,32,0]) <0, 8, 0> = .(.SIGNAL_ARG_PTR [8,0,32,0]) <0, 8, 0>;
;  5039          5156  3         DBG$ACTIVATE_EVENTS();
;  5040          5157  3         RETURN SS$_CONTINUE;
;  5041          5158  2         END;
;  5042          5159  2
;  5043          5160  2
;  5044          5161  2     ! *****SSI
;  5045          5162  2     ! If we got here via System service interception...
;  5046          5163  2     ! Build a SSI enty on the Event List, if this system service calls from
;  5047          5164  2     ! user program, and nobody else has turned on bit 15 in saved PSW in
;  5048          5165  2     ! System Service FP.  (This means that TDBG has seen this already, bit
;  5049          5166  2     ! 15 is set. now is SDBG's turn to examine this singal).  Record the PC
;  5050          5167  2     ! to report Watch At, unprotected the pages...
;  5051          5168  2     !
;  5052          5169  2     IF .EXCEPTION_TYPE EQLU DBG$_SS_INT
;  5053          5170  2     THEN
;  5054          5171  3         BEGIN
;  5055          5172  3         LOCAL
;  5056          5173  3             ADDRESS : VECTOR [2],                 ! Address range for protect
;  5057          5174  3             BIT_15_CNT  REF VECTOR[,BYTE],        ! Has bit 15 turned on?
;  5058          5175  3             BIT_15_CNT_SSV: REF VECTOR[,BYTE],    ! Are we called from System
;  5059          5176  3                                                   !   Service's system service
```

```
;5060          5177  3                                    !   call?
;5061          5178  3          PAGE_ENTRY: REF EVENT$PAGE_DESCRIPTOR,! Page entry pointer
;5062          5179  3          SIGARG: REF VECTOR[,LONG],          ! Info. comes in with DBG$_SS_INT
;5063          5180  3          SSINT_ENTRY: REF EVENT$EVENT_DESCRIPTOR,! SSI event entry
;5064          5181  3          USERS_FP: REF BLOCK[,BYTE];         ! System service call frame
;5065          5182  3
;5066          5183  3
;5067          5184  3      ! Get arg. list.
;5068          5185  3      !
;5069          5186  3      SIGARG = SIGNAL_ARG_PTR[CHF$L_SIG_ARG1];
;5070          5187  3
;5071          5188  3      ! Caused from System service's system call, simply ignore it.
;5072          5189  3      ! note: this variable is a communication variable, it is seen
;5073          5190  3      ! by DBG, TDBG and SDBG.
;5074          5191  3      !
;5075          5192  3      BIT_15_CNT_SSV = .SIGARG[5];
;5076          5193  3      IF .BIT_15_CNT_SSV[0] GTR 1 THEN RETURN SS$_CONTINUE;
;5077          5194  3
;5078          5195  3      ! This type of entry is already built for somebody else (caused from
;5079          5196  3      ! the same source, went through different level).  Ignore it.
;5080          5197  3      ! note: this varialbe is a communication variable, it is seen
;5081          5198  3      ! by DBG, TDBG and SDBG.
;5082          5199  3      !
;5083          5200  3      BIT_15_CNT = .SIGARG[4];
;5084          5201  3      IF .BIT_15_CNT[0] GEQ 1 THEN RETURN SS$_CONTINUE;
;5085          5202  3
;5086          5203  3      ! We'll take it.  Mark the cycle begins.  Build event entry, place
;5087          5204  3      ! it at the head of the event list.
;5088          5205  3      !
;5089          5206  3      DBG$GB_SET_WATCH_FLAG = TRUE;
;5090          5207  3      USERS_FP = .SIGARG[3];
;5091          5208  3      EVENT = .EVENT$CMD_QUEUE [L_QUEUE_FLINK];
;5092          5209  3      SSINT_ENTRY = DBG$GET_MEMORY(EVENT$K_EVENT_DESCRIPTOR_SIZE);
;5093          5210  3      INSQUE (.SSINT_ENTRY, .EVENT[EVENT$L_CMD_BLINK]);
;5094          5211  3      SSINT_ENTRY [EVENT$B_CMD_TYPE] = EVENT$K_TYPE_SSINT;
;5095          5212  3      SSINT_ENTRY [EVENT$B_CMD_KIND] = EVENT$K_KIND_ACC;
;5096          5213  3      SSINT_ENTRY [EVENT$B_SUB_KIND] = EVENT$K_ACC_RTRN;
;5097          5214  3      SSINT_ENTRY [EVENT$V_ONCE_ONLY] = TRUE;
;5098          5215  3      SSINT_ENTRY [EVENT$L_EXC_FLINK] = .SSINT_ENTRY;
;5099          5216  3      SSINT_ENTRY [EVENT$L_EXC_BLINK] = .SSINT_ENTRY;
;5100          5217  3      SSINT_ENTRY [EVENT$L_USERS_FP] = .USERS_FP;
;5101          5218  3      (USERS_FP [SF$W_SAVE_PSW])<15,1,0> = TRUE;
;5102          5219  3      SSINT_ENTRY [EVENT$L_SSV_COUNT] = .BIT_15_CNT_SSV;
;5103          5220  3      SSINT_ENTRY [EVENT$L_FP_RET_CNT] = .BIT_15_CNT;
;5104          5221  3      SSINT_ENTRY [EVENT$L_USERS_PC] = .USERS_FP[SF$L_SAVE_PC];
;5105          5222  3      WATCH_PC = .USERS_FP[SF$L_SAVE_PC];
;5106          5223  3      BIT_15_CNT[0] = .BIT_15_CNT[0] + 1;
;5107          5224  3      IF .BIT_15_CNT[0] EQL 1
;5108          5225  3      THEN
;5109          5226  4          BEGIN
;5110          5227  4          PAGE_ENTRY = .EVENT$PAGE_QUEUE [L_QUEUE_FLINK];
;5111          5228  4          WHILE .PAGE_ENTRY NEQA EVENT$PAGE_QUEUE DO
;5112          5229  5              BEGIN
;5113          5230  5              ADDRESS [0] = .PAGE_ENTRY [EVENT$L_PAGE_ADDRESS];
;5114          5231  5              ADDRESS [1] = .PAGE_ENTRY [EVENT$L_PAGE_ADDRESS];
;5115        P 5232  5              IF NOT $SETPRT (INADR   = ADDRESS,
;5116        P 5233  5                              PROT    = .PAGE_ENTRY [EVENT$B_PAGE_PROTECTION]
```

```
;  5117          5234  6                                )
;  5118          5235  5                THEN
;  5119          5236  5                    SIGNAL (DBG$_NOWPROT)
;  5120          5237  5                ELSE
;  5121          5238  5                    PAGE_ENTRY = .PAGE_ENTRY [EVENT$L_PAGE_FLINK];
;  5122          5239  4                END;
;  5123          5240  3            END;
;  5124          5241  3
;  5125          5242  3        RETURN SS$_CONTINUE;
;  5126          5243  2        END;
;  5127          5244  2
;  5128          5245  2
;  5129          5246  2    ! If this is an exception break or trace, we'll flag it later.
;  5130          5247  2    !
;  5131          5248  2    DBG$GB_EXC_BRE_FLAG = FALSE;
;  5132          5249  2
;  5133          5250  2
;  5134          5251  2    ! Clear the event-match flag, to indicate that we have as yet found no
;  5135          5252  2    ! matching event entry for this exception.
;  5136          5253  2    !
;  5137          5254  2    ACTIVE_EVENT = FALSE;
;  5138          5255  2
;  5139          5256  2
;  5140          5257  2    ! Set the type-source flag, so that we will display the source line at
;  5141          5258  2    ! the first opportunity.
;  5142          5259  2    !
;  5143          5260  2    TYPE_SOURCE = TRUE;
;  5144          5261  2
;  5145          5262  2
;  5146          5263  2    ! Clear the STOP_USER flag, set when a break is valid, or step is over.
;  5147          5264  2    ! This flag is usually set in PROCESS_EVENT when a break breaks, or a
;  5148          5265  2    ! step stops....
;  5149          5266  2    !
;  5150          5267  2    EVENT$B_STOP_USER = FALSE;
;  5151          5268  2
;  5152          5269  2
;  5153          5270  2    ! Set the flag allowing user commands, i.e. no GO, STEP, EXIT, or
;  5154          5271  2    ! CONTINUE commands have been executed yet.  We have to do it here
;  5155          5272  2    ! in case there are no DO's evaluated, since we test it later....
;  5156          5273  2    !
;  5157          5274  2    DBG$GB_TAKE_CMD = TRUE;
;  5158          5275  2
;  5159          5276  2
;  5160          5277  2    ! Deactivate all events.  This will most probably be changed to take
;  5161          5278  2    ! advantage of not HAVING to turn them all off, but later, LATER !
;  5162          5279  2    !
;  5163          5280  2    DBG$DEACTIVATE_EVENTS ();
;  5164          5281  2    IF .EXCEPTION_TYPE EQLU SS$_DEBUG
;  5165          5282  2    THEN
;  5166          5283  3        BEGIN
;  5167          5284  3
;  5168          5285  3
;  5169          5286  3        ! This is the phony way into the user control. This exception name
;  5170          5287  3        ! is passed by the DEBUG startup routine, and by the final handler
;  5171          5288  3        ! when an exception generated in a user program has not been dealt
;  5172          5289  3        ! with by any user handlers (and so has been reported by the DEBUG
;  5173          5290  3        ! final handler),  when the user is passed control in order to fix
```

```
;  5174          5291  3          ! up the condition that caused the problem.
;  5175          5292  3          !
;  5176          5293  3          ! We'll act as though a BREAKpoint was encountered.
;  5177          5294  3          !
;  5178          5295  3          EVENT$B_STOP_USER = TRUE;
;  5179          5296  3          ACTIVE_EVENT = TRUE;
;  5180          5297  2          END;
;  5181          5298  2
;  5182          5299  2
;  5183          5300  2      ! If the user program has completed, cancel any pending STEP events.
;  5184          5301  2      !
;  5185          5302  2      IF .DBG$RUNFRAME[DBG$L_USER_PC] EQL 0
;  5186          5303  2      THEN
;  5187          5304  3          BEGIN
;  5188          5305  3          EVENT = EVENT$CMD_QUEUE[A_QUEUE_ENTRY];
;  5189          5306  3          WHILE TRUE DO
;  5190          5307  4              BEGIN
;  5191          5308  4              EVENT = .EVENT[EVENT$L_CMD_FLINK];
;  5192          5309  4              IF .EVENT EQLA EVENT$CMD_QUEUE[A_QUEUE_ENTRY] THEN EXITLOOP;
;  5193          5310  5              IF (.EVENT[EVENT$B_CMD_TYPE] EQL EVENT$K_TYPE_STEPS)
;  5194          5311  4              THEN
;  5195          5312  4                  EVENT[EVENT$V_DELETED] = TRUE;
;  5196          5313  4
;  5197          5314  4              END;
;  5198          5315  3
;  5199          5316  3          END
;  5200          5317  3
;  5201          5318  2      ELSE
;  5202          5319  3          BEGIN
;  5203          5320  3
;  5204          5321  3
;  5205          5322  3          ! Based on exception name, handle the exception....
;  5206          5323  3          !
;  5207          5324  3          SELECTONE .EXCEPTION_TYPE OF
;  5208          5325  3              SET
;  5209          5326  3
;  5210          5327  3              [SS$_ROPRAND,SS$_DEBUG,SS$_BREAK,SS$_TBIT]:
;  5211          5328  3                IF (.EXCEPTION_TYPE NEQ SS$_DEBUG) OR
;  5212          5329  3                   .DBG$GV_CONTROL[DBG$V_CONTROL_STOP]
;  5213          5330  3                THEN
;  5214          5331  4                  BEGIN
;  5215          5332  4
;  5216          5333  4
;  5217          5334  4                  ! A BPT or TBIT gets us here.  These are two of the
;  5218          5335  4                  ! exceptions DEBUG uses to make events happen, and so
;  5219          5336  4                  ! are treated specially here.
;  5220          5337  4                  !
;  5221          5338  4                  ! Point to the current last entry on the queue.  We'll only
;  5222          5339  4                  ! examine entries until :
;  5223          5340  4                  !  a) we're at the actual end of the queue, or
;  5224          5341  4                  ! b) we've looked at the last entry we knew about when we started.
;  5225          5342  4                  ! This is because processing a DO might add entries that we
;  5226          5343  4                  ! then want to ignore....
;  5227          5344  4                  !
;  5228          5345  4                  LAST1 = .EVENT$CMD_QUEUE [L_QUEUE_BLINK];
;  5229          5346  4
;  5230          5347  4
```

```
;  5231          5343  4                ! For each event entry in the queue, check to see if it is
;  5232          5349  4                ! active....
;  5233          5350  4                !
;  5234          5351  4                EVENT = .EVENT$CMD_QUEUE [L_QUEUE_FLINK];
;  5235          5352  4                WHILE .EVENT NEQA EVENT$CMD_QUEUE [A_QUEUE_ENTRY] DO
;  5236          5353  5                    BEGIN
;  5237          5354  5
;  5238          5355  5
;  5239          5356  5                    ! Make sure that the entry isn't deleted but not removed....
;  5240          5357  5                    !
;  5241          5358  5                    IF NOT .EVENT [EVENT$V_DELETED]
;  5242          5359  5                    THEN
;  5243          5360  6                        BEGIN
;  5244          5361  6
;  5245          5362  6
;  5246          5363  6                        ! If this entry is to be IGNORed....
;  5247          5364  6                        !
;  5248          5365  6                        IF .EVENT [EVENT$B_CMD_TYPE] EQLU EVENT$K_TYPE_IGNOR
;  5249          5366  6                        THEN
;  5250          5367  6
;  5251          5368  6
;  5252          5369  6                            ! IGNORed entries are always deleted.  If this wasn't
;  5253          5370  6                            ! a TBIT exception, the entry will be re-entered when
;  5254          5371  6                            ! the associated parent-event is re-activated ('cause
;  5255          5372  6                            ! all IGNORed entries are used to TBIT over some
;  5256          5373  6                            ! instruction).
;  5257          5374  6                            !
;  5258          5375  7                            BEGIN
;  5259          5376  7                            EVENT [EVENT$V_DELETED] = TRUE;
;  5260          5377  7
;  5261          5378  7
;  5262          5379  7                        ! Ignored entries are active if this is a TBIT.
;  5263          5380  7                        !
;  5264          5381  7                        IF .EXCEPTION_TYPE EQLU SS$_TBIT
;  5265          5382  7                        THEN
;  5266          5383  7                            ACTIVE_EVENT = TRUE;
;  5267          5384  7                        END
;  5268          5385  7
;  5269          5386  6                    ELSE
;  5270          5387  6
;  5271          5388  6                        ! This is a 'real' event, not an IGNORed one.
;  5272          5389  6                        !
;  5273          5390  6                        BEGIN
;  5274          5391  7
;  5275          5392  7
;  5276          5393  7                        ! Case on the kind of event entry, to determine whether
;  5277          5394  7                        ! the exception is applicable, and if the entry is
;  5278          5395  7                        ! active.
;  5279          5396  7                        !
;   280          5397  7                        CASE .EVENT [EVENT$B_CMD_KIND]
;   281          5398  7                        FROM EVENT$K_KIND_ACC TO EVENT$K_KIND_EXC OF
;   282          5399  7                            SET
;  5283          5400  7                            [EVENT$K_KIND_ACC]:
;  5284          5401  7
;  5285          5402  7
;  5286          5403  7                                ! Case on the access sub-kind....
;  5287          5404  7
```

```
;  5288          5405  7
;  5289          5406  7
;  5290          5407  7
;  5291          5408  7
;  5292          5409  7
;  5293          5410  7
;  5294          5411  7
;  5295          5412  7
;  5296          5413  7
;  5297          5414  7
;  5298          5415  7
;  5299          5416  7
;  5300          5417  7
;  5301          5418  7
;  5302          5419  7
;  5303          5420  7
;  5304          5421  7
;  5305          5422  7
;  5306          5423  7
;  5307          5424  7
;  5308          5425  7
;  5309          5426  7
;  5310          5427  7
;  5311          5428  7
;  5312          5429  7
;  5313          5430  7
;  5314          5431  7
;  5315          5432  7
;  5316          5433  7
;  5317          5434  8
;  5318          5435  8
;  5319          5436  8
;  5320          5437  8
;  5321          5438  8
;  5322          5439  8
;  5323          5440  8
;  5324          5441  8
;  5325          5442  8
;  5326          5443  8
;  5327          5444  8
;  5328          5445  8
;  5329          5446  8
;  5330          5447  8
;  5331          5448  8
;  5332          5449  8
;  5333          5450  8
;  5334          5451  8
;  5335          5452  8
;  5336          5453  8
;  5337          5454  8
;  5338          5455  8
;  5339          5456  8
;  5340          5457  8
;  5341          5458  8
;  5342          5459  8
;  5343          5460  8
;  5344          5461  8
```

```
!
CASE .EVENT [EVENT$B_SUB_KIND]
FROM EVENT$K_ACC_READ TO EVENT$K_ACC_RTRN OF
    SET

    [EVENT$K_ACC_READ]:
        ;

    [EVENT$K_ACC_WRIT]:
        ;

    [EVENT$K_ACC_MDFY]:

        ! If we're skipping ACCVIOS (meaning
        ! we had one, and it's page address
        ! was one we're watching for....
        ! *****SSI
        ! If we're returned from system
        ! service, or during system service
        ! cycle...
        !
        IF .SKIP_ACCVIOS OR
           .SKIP_WATCHES OR
           .DBG$GB_SET_WATCH_FLAG
        THEN
            BEGIN
            LOCAL
                LENGTH;

            ! We've got an active event.
            !
            ACTIVE_EVENT = TRUE;

            ! Get the byte length of the
            ! entry's value.  Note that we
            ! actually get its bit length and
            ! round up.  This should be okay
            ! 'cause the values saved in a
            ! value descriptor are padded out
            ! to fill bytes.
            !
            LENGTH =
                DBG$DATA_LENGTH
                    (EVENT [EVENT$A_VMSDESC]);
            LENGTH = (.LENGTH + 7) * -3;
            GET_WATCH_POINT_VALUE(.EVENT);
            OLDVALUE =
                .EVENT [EVENT$L_VALDESC];

            ! Now, compare the two values, and
```

```
;  5345          5462  8                ! process the event is they're the
;  5346          5463  8                ! same.
;  5347          5464  8                !
;  5348          5465  8                IF CH$EQL
;  5349          5466  8                     (.LENGTH,
;  5350          5467  8                      OLDVALUE [DBG$A_VALUE_ADDRESS],
;  5351          5468  8                      .LENGTH,
;  5352          5469  8                      NEWVALUE [DBG$A_VALUE_ADDRESS],
;  5353          5470  8                      0
;  5354          5471  8                     )
;  5355          5472  8                THEN
;  5356          5473  8                    DBG$NFREE_DESC(.NEWVALUE)
;  5357          5474  8                ELSE
;  5358          5475  9                    BEGIN
;  5359          5476  9
;  5360          5477  9                    ! Process the entry.
;  5361          5478  9                    !
;  5362          5479  9                    IF .SKIP_WATCHES OR
;  5363          5480  9                       .DBG$GB_SET_WATCH_FLAG
;  5364          5481  9                    THEN
;  5365          5482  9                        ACCVIO_PC = .WATCH_PC;
;  5366          5483  9                    STATUS = DBG$PROCESS_EVENT
;  5367          5484  9                                (.EVENT,
;  5368          5485  9                                 .SIGNAL_ARG_PTR
;  5369          5486  9                                );
;  5370          5487  9
;  5371          5488  9                    ! Update the value descriptor in the event entry to refl
;  5372          5489  9                    ! new value.
;  5373          5490  9                    ! Then, since we are finished with the value descriptor
;  5374          5491  9                    ! free up the memory.
;  5375          5492  9                    !
;  5376          5493  9                    CH$MOVE
;  5377          5494  9                        (.LENGTH,
;  5378          5495  9                         NEWVALUE [DBG$A_VALUE_ADDRESS],
;  5379          5496  9                         OLDVALUE [DBG$A_VALUE_ADDRESS]
;  5380          5497  9                        );
;  5381          5498  9                    DBG$NFREE_DESC(.NEWVALUE);
;  5382          5499  9
;  5383          5500  9                    ! If we have been pre-
;  5384          5501  9                    ! empted by a GO, STEP,
;  5385          5502  9                    ! CONTINUE, or EXIT, we will
;  5386          5503  9                    ! stop processing.
;  5387          5504  9                    !
;  5388          5505  9                    IF .STATUS
;  5389          5506  9                    THEN
;  5390          5507  9                        EXITLOOP;
;  5391          5508  9                    END;
;  5392          5509  8                END;
;  5393          5510  7
;  5394          5511  7
;  5395          5512  7            ! Process an /EXECUTION (BREAK/TRACE)
;  5396          5513  7            ! entry.
;  5397          5514  7            !
;  5398          5515  7
;  5399          5516  7            [EVENT$K_ACC_EXEC]:
;  5400          5517  8                BEGIN
;  5401          5518  8
```

```
;  5402          5519  8
;  5403          5520  8
;  5404          5521  8
;  5405          5522  8
;  5406          5523  8
;  5407          5524  8
;  5408          5525  8
;  5409          5526  9
;  5410          5527  9
;  5411          5528  9
;  5412          5529  9
;  5413          5530  9
;  5414          5531  9
;  5415          5532  9
;  5416          5533  9
;  5417          5534  9
;  5418          5535  9
;  5419          5536  9
;  5420          5537  9
;  5421          5538  9
;  5422          5539  9
;  5423          5540  9
;  5424          5541  9
;  5425          5542  9
;  5426          5543  8
;  5427          5544  8
;  5428          5545  7
;  5429          5546  7
;  5430          5547  7
;  5431          5548  7
;  5432          5549  7
;  5433          5550  7
;  5434          5551  7
;  5435          5552  8
;  5436          5553  8
;  5437          5554  8
;  5438          5555  8
;  5439          5556  8
;  5440          5557  8
;  5441          5558  8
;  5442          5559  8
;  5443          5560  8
;  5444          5561  9
;  5445          5562  8
;  5446          5563  8
;  5447          5564  8
;  5448          5565  9
;  5449          5566  9
;  5450          5567  9
;  5451          5568  9
;  5452          5569  9
;  5453          5570  9
;  5454          5571  9
;  5455          5572  9
;  5456          5573  9
;  5457          5574  9
;  5458          5575  9
```

```
    ! Match the address of the eventpoint
    ! with the current PC for an active
    ! event...
    !
    IF .EVENT [EVENT$L_ADDRESS] EQLA .USERS_PC
    THEN
        BEGIN


        ! The event is active, so process
        ! the entry.  If on return we have
        ! been pre-empted by a GO, STEP,
        ! CONTINUE, or EXIT, we will stop
        ! processing.
        !
        ACTIVE_EVENT = TRUE;
        IF DBG$PROCESS_EVENT
                (.EVENT,
                 .SIGNAL_ARG_PTR
                )
        THEN
            EXITLOOP;

        END;

    END;


! Process a /RETURN (BREAK/TRACE/STEPS/
! SKIPS) entry.
!
[EVENT$K_ACC_RTRN]:
    BEGIN


    ! Based on the event command type....
    !
    SELECTONE .EVENT [EVENT$B_CMD_TYPE] OF
        SET


        ! [BREAK!TRACE]/RETURN
        !
        [EVENT$K_TYPE_BREAK,
         EVENT$K_TYPE_TRACE]:
            BEGIN


            ! Match the address of the
            ! eventpoint with the current
            ! PC for an active event...
            ! Also make sure the exception is not ROPRAND
            ! (this is in case the user sets a
            ! return break at the RET).
            !
            IF (.EVENT [EVENT$L_ADDRESS] EQLA .USERS_PC) AND
```

```
;  5459          5576 10                    (.EXCEPTION_TYPE NEQ SS$_ROPRAND)
;  5460          5577  9                THEN
;  5461          5578 10                    BEGIN
;  5462          5579 10
;  5463          5580 10                    ! The event is active.
;  5464          5581 10                    !
;  5465          5582 10                    ACTIVE_EVENT = TRUE;
;  5466          5583 10
;  5467          5584 10                    ! Get a new event descriptor
;  5468          5585 10                    ! and link it into the
;  5469          5586 10                    ! command queue. Note that
;  5470          5587 10                    ! this entry is placed in
;  5471          5588 10                    ! the queue just in front
;  5472          5589 10                    ! of its parent, and should
;  5473          5590 10                    ! be encountered first !!!
;  5474          5591 10                    !
;  5475          5592 10                    SKIPS_ENTRY =
;  5476          5593 10                        DBG$GET_MEMORY
;  5477          5594 10                            (EVENT$K_EVENT_DESCRIPTOR_SIZE);
;  5478          5595 10                    INSQUE (.SKIPS_ENTRY,
;  5479          5596 10                            .EVENT[EVENT$L_CMD_BLINK]
;  5480          5597 10                           );
;  5481          5598 10
;  5482          5599 10                    ! Setup this entry to be a
;  5483          5600 10                    ! /RETURN skip-event,
;  5484          5601 10                    ! linking to the event
;  5485          5602 10                    ! entry causing this mess.
;  5486          5603 10                    !
;  5487          5604 10                    SKIPS_ENTRY[EVENT$B_CMD_TYPE] =
;  5488          5605 10                        EVENT$K_TYPE_SKIPS;
;  5489          5606 10                    SKIPS_ENTRY[EVENT$B_CMD_KIND] =
;  5490          5607 10                        EVENT$K_KIND_ACC;
;  5491          5608 10                    SKIPS_ENTRY[EVENT$B_SUB_KIND] =
;  5492          5609 10                        EVENT$K_ACC_RTRN;
;  5493          5610 10                    SKIPS_ENTRY[EVENT$V_ONCE_ONLY] =
;  5494          5611 10                        TRUE;
;  5495          5612 10                    INSQUE1 (.SKIPS_ENTRY, .EVENT);
;  5496          5613 10
;  5497          5614 10                    ! Initialize the FP to 0 so it gets
;  5498          5615 10                    ! setup when activated.
;  5499          5616 10                    !
;  5500          5617 10                    SKIPS_ENTRY[EVENT$L_USERS_FP] = 0;
;  5501          5618 10                    END;
;  5502          5619 10                END;
;  5503          5620 10
;  5504          5621 10            ! [BREAK!TRACE/RETURN skips and
;  5505          5622  9            ! STEP/RETURN
;  5506          5623  8            !
;  5507          5624  8            [EVENT$K_TYPE_SKIPS,
;  5508          5625  8             EVENT$K_TYPE_STEPS]:
;  5509          5626  8                BEGIN
;  5510          5627  8                SELECTONE .EXCEPTION_TYPE OF
;  5511          5628  8
;  5512          5629  8
;  5513          5630  8
;  5514          5631  9
;  5515          5632  9
```

```
;  5516          5633  9                    SET
;  5517          5634  9                    [SS$_ROPRAND]:
;  5518          5635 10                        BEGIN
;  5519          5636 10                        LOCAL
;  5520          5637 10                            RIGHT_FP_FLAG;
;  5521          5638 10
;  5522          5639 10                        IF .OPCODE EQL %X'04'
;  5523          5640 10                        THEN
;  5524          5641 10                            RIGHT_FP_FLAG =  MATCH_RIGHT_CALL_FRAME(.EVE
;  5525          5642 10                        ELSE
;  5526          5643 10                            RIGHT_FP_FLAG = FALSE;
;  5527          5644 10
;  5528          5645 10                        IF .RIGHT_FP_FLAG
;  5529          5646 10                        THEN
;  5530          5647 11                            BEGIN
;  5531          5648 11                            ACTIVE_EVENT = TRUE;
;  5532          5649 11
;  5533          5650 11                            ! We've come to the RET instruction that we
;  5534          5651 11                            ! in the process of stepping over a routine.
;  5535          5652 11                            ! want to change our RETURN event back into
;  5536          5653 11                            ! ordinary STEP event, to resume stepping no
;  5537          5654 11                            !
;  5538          5655 11                            IF .EVENT [EVENT$V_STEP_BPT]
;  5539          5656 11                            THEN
;  5540          5657 12                                BEGIN
;  5541          5658 12                                EVENT [EVENT$V_STEP_BPT] = FALSE;
;  5542          5659 12                                EVENT [EVENT$B_CMD_KIND] = EVENT$K_KIND
;  5543          56 0 12                                EVENT [EVENT$B_SUB_KIND] = .EVENT [EVENT
;  5544          ,061 12                                END
;  5545          5662 12
;  5546          5663 12                            ! Process the entry.  If on return we have b
;  5547          5664 12                            ! preempted by a GO,  STEP,  CONTINUE,  or E
;  5548          5665 12                            ! we will stop processing.
;  5549          5666 12                            !
;  5550          5667 11                            ELSE IF DBG$PROCESS_EVENT
;  5551          5668 11                                    (.EVENT,
;  5552          5669 11                                     .SIGNAL_ARG_PTR)
;  5553          5670 11                            THEN
;  5554          5671 11                                EXITLOOP;
;  5555          5672 11
;  5556          5673 10                            END;
;  5557          5674 10
;  5558          5675  9                        END;
;  5559          5676  9
;  5560          5677  9                    [SS$_TBIT]:
;  5561          5678  9                        IF .EVENT [EVENT$V_STEP_BPT]
;  5562          5679  9                           THEN ACTIVE_EVENT = TRUE;
;  5563          5680  9
;  5564          5681  9                    [OTHERWISE]:
;  5565          5682  9                        0;
;  5566          5683  9                    TES;
;  5567          5684  8                END;
;  5568          5685  8
;  5569          5686  8                ! *****SSI
;  5570          5687  8                ! We are examing the SSI entry was built
;  5571          5688  8                ! at DBG$_SS_INT signal...
;  5572          5689  8                !
```

```
;  5573          5690  8                        [EVENT$K_TYPE_SSINT]:
;  5574          5691  9                            BEGIN
;  5575          5692  9
;  5576          5693  9                            ! Well?  Caused from Reserved Operand
;  5577          5694  9                            ! fault?
;  5578          5695  9                            !
;  5579          5696 10                            IF (.DBG$RUNFRAME [DBG$L_USER_FP] EQLA
;  5580          5697 10                                .EVENT [EVENT$L_USERS_FP])
;  5581          5698 10                            AND (.OPCODE EQLU %X'04')
;  5582          5699  9                            THEN
;  5583          5700 10                                BEGIN
;  5584          5701 10                                EVENT [EVENT$V_DELETED] = TRUE;
;  5585          5702 10                                ACTIVE_EVENT = TRUE;
;  5586          5703 10                                EVENT$B_STOP_USER = FALSE;
;  5587          5704 10                                DBG$GB_TAKE_CMD = FALSE;
;  5588          5705 10                                EXITLOOP;
;  5589          5706  9                                END;
;  5590          5707  8                            END;
;  5591          5708  8                        TES;
;  5592          5709  7                    END;
;  5593          5710  7                TES;
;  5594          5711  7
;  5595          5712  7
;  5596          5713  7            [EVENT$K_KIND_INS]:
;  5597          5714  8                BEGIN
;  5598          5715  8
;  5599          5716  8                ! If this is a TBIT (or DEBUG) or BREAK
;  5600          5717  8                ! exception when stepping over, process
;  5601          5718  8                ! a step.
;  5602          5719  8                !
;  5603          5720  8                IF (SELECTONE .EXCEPTION_TYPE OF
;  5604          5721  9                        SET
;  5605          5722  9                        [SS$_TBIT, SS$_DEBUG]:
;  5606          5723  9                            IF .EVENT [EVENT$V_STEP_BPT]
;  5607          5724  9                            THEN
;  5608          5725  9                                IF .EVENT [EVENT$L_ADDRESS] EQLA .USERS_PC
;  5609          5726  9                                THEN
;  5610          5727  9                                    TRUE
;  5611          5728  9                                ELSE
;  5612          5729  9                                    FALSE
;  5613          5730  9                            ELSE
;  5614          5731  9                                TRUE;
;  5615          5732  9                        [SS$_BREAK]:
;  5616          5733  9                            IF .EVENT [EVENT$V_STEP_BPT]
;  5617          5734  9                            THEN
;  5618          5735  9                                IF .EVENT [EVENT$L_ADDRESS] EQLA .USERS_PC
;  5619          5736  9                                THEN
;  5620          5737  9                                    TRUE
;  5621          5738  9                                ELSE
;  5622          5739  9                                    FALSE
;  5623          5740  9                            ELSE
;  5624          5741  9                                FALSE;
;  5625          5742  9                        [OTHERWISE]:
;  5626          5743  9                            FALSE;
;  5627          5744  9                        TES
;  5628          5745  9                    )
;  5629          5746  9
```

```
;  5630          5747  8 THEN
;  5631          5748  9     BEGIN
;  5632          5749  9
;  5633          5750  9     ! The event is active, regardless.
;  5634          5751  9     !
;  5635          5752  9     ACTIVE_EVENT = TRUE;
;  5636          5753  9
;  5637          5754  9
;  5638          5755  9     ! If this was a BPT exception, turn off the
;  5639          5756  9     ! STEP_BPT flag - we're done stepping over.
;  5640          5757  9     !
;  5641          5758  9     IF .EXCEPTION_TYPE EQLU SS$_BREAK
;  5642          5759  9     THEN
;  5643          5760  9         EVENT [EVENT$V_STEP_BPT] = FALSE;
;  5644          5761  9
;  5645          5762  9     ! Depending on the step type (line/instruction) process the step.
;  5646          5763  9     ! We also check here that either we are stepping /system, or else we
;  5647          5764  9     ! not be in system space. That is, if we find that we are stepping n
;  5648          5765  9     ! and that we are indeed in system space, then the IF condition will
;  5649          5766  9     ! false and we will not process the event. We actually use ADDRESS G
;  5650          5767  9     ! as our determination of what is system space, since most system se
;  5651          5768  9     ! are actually entered through P1 space now.
;  5652          5769  9     !
;  5653          5770  9     IF ((NOT .EVENT [EVENT$V_STEP_NOSYSTEM]) OR
;  5654          5771 10         (.DBG$RUNFRAME[DBG$L_USER_PC] LSS P1_SPACE))
;  5655          5772 10                 AND
;  5656          5773  9        (SELECTONE .EVENT [EVENT$B_SUB_KIND] OF
;  5657          5774 10             SET
;  5658          5775 10             [EVENT$K_INS_EVRY]:
;  5659          5776 10                 TRUE;
;  5660          5777 10
;  5661          5778 10             [EVENT$K_INS_CALL,EVENT$K_INS_BRAN,EVENT$K_INS_USER]:
;  5662          5779 10                 BEGIN
;  5663          5780 11                 BIND
;  5664          5781 11                     OP_MAP = EVENT[EVENT$L_OPCODE_LIST] : REF BITVECTOR
;  5665          5782 11
;  5666          5783 11                 ! Check the opcode bitmap to see if the current
;  5667          5784 11                 ! instruction is one we're looking for.
;  5668          5785 11                 !
;  5669          5786 11
;  5670          5787 11                 .OP_MAP [.OPCODE]
;  5671          5788 11                 END;
;  5672          5789 10
;  5673          5790 10             [EVENT$K_INS_LINE]:
;  5674          5791 10
;  5675          5792 10                 ! In the following parenthesized expression,
;  5676          5793 10                 ! TRUE =>  process this event, which generally means
;  5677          5794 10                 !          stop tbit-ing and take user commands,
;  5678          5795 10                 ! FALSE => don't take this event,
;  5679          5796 10                 !          which generally means keep tbit-ing.
;  5680          5797 10
;  5681          5798 10                 ! If we are still in the range given by
;  5682          5799 10                 ! LO_PC, HI_PC then don't take the event -
;  5683          5800 10                 ! keep tbit-ing.
;  5684          5801 10                 !
;  5685          5802 10                 (IF (.USERS_PC GEQA .EVENT [EVENT$L_STEP_LO_PC])
;  5686          5803 12
```

```
;  5687          5804 11                                                 AND
;  5688          5805 12                      (.USERS_PC LEQA .EVENT [EVENT$L_STEP_HI_PC])
;  5689          5806 11                  THEN FALSE
;  5690          5807 11                  ELSE
;  5691          5808 12                      BEGIN
;  5692          5809 12                      LOCAL
;  5693          5810 12                          LINENO,
;  5694          5811 12                          MODRST,
;  5695          5812 12                          STATUS,
;  5696          5813 12                          STMTNO;
;  5697          5814 12
;  5698          5815 12                      ! The PC is out of the LO_PC, HI_PC range.
;  5699          5816 12                      ! Call the PC lookup routine to get a new range.
;  5700          5817 12                      ! If the PC lookup routine returns FALSE
;  5701          5818 12                      ! (0 or 2) then the lookup failed. In this
;  5702          5819 12                      ! case re-initialize the range to 1,0 so
;  5703          5820 12                      ! that we immediately are out of the range
;  5704          5821 12                      ! again after the next tbit.
;  5705          5822 12                      !
;  5706          5823 12                      MODRST = 0;
;  5707          5824 12                      STATUS = DBG$PC_TO_LINE_LOOKUP(
;  5708          5825 12                              .USERS_PC,
;  5709          5826 12                              LINENO,
;  5710          5827 12                              STMTNO,
;  5711          5828 12                              EVENT[EVENT$L_STEP_LO_PC],
;  5712          5829 12                              EVENT[EVENT$L_STEP_HI_PC],
;  5713          5830 12                              MODRST);
;  5714          5831 12                      IF NOT .STATUS THEN
;  5715          5832 13                          BEGIN
;  5716          5833 13                          EVENT[EVENT$L_STEP_LO_PC] = 1;
;  5717          5834 13                          EVENT[EVENT$L_STEP_HI_PC] = 0;
;  5718          5835 12                          END;
;  5719          5836 12
;  5720          5837 12                      ! The lookup routine can return any of:
;  5721          5838 12                      ! 0 - no line number information for module
;  5722          5839 12                      ! 1 - exact match to line
;  5723          5840 12                      ! 2 - have pc/line tables, but no match for this PC
;  5724          5841 12                      ! 3 - found line, not exact match.
;  5725          5842 12                      ! We definitely want to stop and take user commands
;  5726          5843 12                      ! for 0 (examples are stepping into RTL or module
;  5727          5844 12                      ! that is not set).
;  5728          5845 12                      ! We also want to stop for 1 (stepped to the beginni
;  5729          5846 12                      ! of a new line), and 3 (stepped to the middle of
;  5730          5847 12                      ! a new line).
;  5731          5848 12                      ! For 2, we keep going - we have stepped to a
;  5732          5849 12                      ! between-lines location. RPG generates this kind
;  5733          5850 12                      ! of code, and doesn't want us to stop at
;  5734          5851 12                      ! addresses without line numbers.
;  5735          5852 12                      !
;  5736          5853 13                      (.STATUS NEQ 2)
;  5737          5854 10                      END);
;  5738          5855 10                  TES
;  5739          5856 10              )
;  5740          5857  9          THEN
;  5741          5858  9
;  5742          5859  9              ! The entry is active.
;  5743          5860  9
```

```
;  5744          5861  9                    !
;  5745          5862 10                    BEGIN
;  5746          5863 10
;  5747          5864 10                    ! Process the entry.  If on return we
;  5748          5865 10                    ! have been preempted by a GO, STEP,
;  5749          5866 10                    ! CONTINUE, or EXIT, we will stop
;  5750          5867 10                    ! processing.
;  5751          5868 10                    !
;  5752          5869 10                    IF DBG$PROCESS_EVENT
;  5753          5870 10                            (.EVENT,
;  5754          5871 10                             .SIGNAL_ARG_PTR
;  5755          5872 10                            )
;  5756          5873 10                    THEN
;  5757          5874 10                        EXITLOOP;
;  5758          5875 10
;  5759          5876  9                    END;
;  5760          5877  9
;  5761          5878  8                END;
;  5762          5879  8
;  5763          5880  7            END;
;  5764          5881  7
;  5765          5882  7
;  5766          5883  7            [EVENT$K_KIND_EXC]:
;  5767          5884  7                0;
;  5768          5885  7
;  5769          5886  7            TES;
;  5770          5887  7
;  5771          5888  7
;  5772          5889  7                    ! Release any temporary memory used during the
;  5773          5890  7                    ! processing of this event.  Also release all
;  5774          5891  7                    ! Temporary RST Entries that have zero reference
;  5775          5892  7                    ! counts.
;  5776          5893  7                    !
;  5777          5894  7                    DBG$REL_TEMPMEM ();
;  5778          5895  7                    DBG$RST_TEMP_RELEASE();
;  5779          5896  6                    END;
;  5780          5897  6
;  5781          5898  5                END;
;  5782          5899  5
;  5783          5900  5
;  5784          5901  5                ! If this entry was the 'last' one, exit this loop.  Any others
;  5785          5902  5                ! on the list now came from "SET BREAK ..." commands in some
;  5786          5903  5                ! entry's DO command list....
;  5787          5904  5                !
;  5788          5905  5                IF .EVENT EQLA .LAST1 THEN EXITLOOP;
;  5789          5906  5
;  5790          5907  5
;  5791          5908  5                ! Link to the next entry.
;  5792          5909  5                !
;  5793          5910  5                EVENT = .EVENT [EVENT$L_CMD_FLINK];
;  5794          5911  4                END;
;  5795          5912  4
;  5796          5913  4
;  5797          5914  4            ! We're not skipping ACCVIO's any longer.
;  5798          5915  4            !
;  5799          5916  4            SKIP_ACCVIOS = FALSE;
;  5800          5917  4            SKIP_WATCHES = FALSE;
```

```
;  5801          5918  3              END;
;  5802          5919  3
;  5803          5920  3
;  5804          5921  3          [SS$_ACCVIO]:
;  5805          5922  3
;  5806          5923  3              ! DEBUG uses ACCVIO's for /MODIFY events.  When an ACCVIO occurs,
;  5807          5924  3              ! we search the page queue for a page address match.  If one is
;  5808          5925  3              ! found, we flag the event as active, flag that we're skipping
;  5809          5926  3              ! the ACCVIO, and we're done.
;  5810          5927  3              !
;  5811          5928  3              BEGIN
;  5812          5929  4              LOCAL
;  5813          5930  4                  PAGE_ENTRY :        REF EVENT$PAGE_DESCRIPTOR,  ! Page entry
;  5814          5931  4                  PAGE_ADDRESS;
;  5815          5932  4
;  5816          5933  4              IF NOT .SKIP_ACCVIOS
;  5817          5934  4              THEN
;  5818          5935  4                  BEGIN
;  5819          5936  5
;  5820          5937  5                  ! Get the page address, and point to the 1st page entry.
;  5821          5938  5                  !
;  5822          5939  5                  PAGE_ADDRESS = .SIGNAL_ARG_PTR [12,0,32,0] AND %X'FFFFFE00';
;  5823          5940  5                  PAGE_ENTRY = .EVENT$PAGE_QUEUE [L_QUEUE_FLINK];
;  5824          5941  5
;  5825          5942  5                  ! Search the page queue for an entry with this address.
;  5826          5943  5                  !
;  5827          5944  5                  WHILE .PAGE_ENTRY NEQA EVENT$PAGE_QUEUE DO
;  5828          5945  5                      BEGIN
;  5829          5946  5                      IF .PAGE_ENTRY [EVENT$L_PAGE_ADDRESS] EQLA .PAGE_ADDRESS
;  5830          5947  5                      THEN
;  5831          5948  6
;  5832          5949  6                          ! Found the matching entry, so flag that we're skipping
;  5833          5950  6                          ! 'cause of an ACCVIO, and exit the search loop.
;  5834          5951  6                          !
;  5835          5952  6                          BEGIN
;  5836          5953  6                          SKIP_ACCVIOS = TRUE;
;  5837          5954  6                          ACTIVE_EVENT = TRUE;
;  5838          5955  6                          EXITLOOP;
;  5839          5956  7                          END
;  5840          5957  7
;  5841          5958  7                      ELSE
;  5842          5959  7                          PAGE_ENTRY = .PAGE_ENTRY [EVENT$L_PAGE_FLINK];
;  5843          5960  7
;  5844          5961  7                      END;
;  5845          5962  6
;  5846          5963  6                  ! Save the current PC for announcing where we were after we've
;  5847          5964  6                  ! finished executing this instruction.
;  5848          5965  5                  !
;  5849          5966  5                  ACCVIO_PC = .USERS_PC;
;  5850          5967  5                  END;
;  5851          5968  5
;  5852          5969  5              END;
;  5853          5970  5
;  5854          5971  5
;  5855          5972  4
;  5856          5973  4
;  5857          5974  3
```

```
;  5858          5975  3
;  5859          5976  3            TES;
;  5860          5977  3
;  5861          5978  3
;  5862          5979  3        ! If no active events were discovered, look through the queue (as we
;  5863          5980  3        ! remember it, sans any new additions) for an exception break.  If
;  5864          5981  3        ! found process it.
;  5865          5982  3        !
;  5866          5983  3        IF NOT .ACTIVE_EVENT
;  5867          5984  3        THEN
;  5868          5985  4            BEGIN
;  5869          5986  4
;  5870          5987  4
;  5871          5988  4            ! For each event entry in the queue, check to see if it is active....
;  5872          5989  4            !
;  5873          5990  4            EVENT = .EVENT$CMD_QUEUE [L_QUEUE_FLINK];
;  5874          5991  4            WHILE .EVENT NEQA EVENT$CMD_QUEUE [A_QUEUE_ENTRY] DO
;  5875          5992  5                BEGIN
;  5876          5993  5
;  5877          5994  5
;  5878          5995  5                ! Make sure that the entry isn't deleted but not removed....
;  5879          5996  5                !
;  5880          5997  5                IF NOT .EVENT [EVENT$V_DELETED]
;  5881          5998  5                THEN
;  5882          5999  5
;  5883          6000  5
;  5884          6001  5                    ! If this is an exception break....
;  5885          6002  5                    !
;  5886          6003  5                    IF .EVENT [EVENT$B_CMD_KIND] EQLU EVENT$K_KIND_EXC
;  5887          6004  5                    THEN
;  5888          6005  6                        BEGIN
;  5889          6006  6
;  5890          6007  6
;  5891          6008  6                        ! The event is active.
;  5892          6009  6                        !
;  5893          6010  6                        ACTIVE_EVENT = TRUE;
;  5894          6011  6
;  5895          6012  6
;  5896          6013  6                        ! This is an exception break or trace, so flag it.
;  5897          6014  6                        !
;  5898          6015  6                        DBG$GB_EXC_BRE_FLAG = TRUE;
;  5899          6016  6
;  5900          6017  6
;  5901          6018  6                        ! Process the event, and scoot (it's the only one).
;  5902          6019  6                        !
;  5903          6020  6                        DBG$PROCESS_EVENT (.EVENT, .SIGNAL_ARG_PTR);
;  5904          6021  6                        EXITLOOP;
;  5905          6022  5                        END;
;  5906          6023  5
;  5907          6024  5
;  5908          6025  5                ! If this entry was the 'last' one, exit this loop.  Any others
;  5909          6026  5                ! on the list now came from "SET BREAK ..." commands in some
;  5910          6027  5                ! entry's DO command list....
;  5911          6028  5                !
;  5912          6029  5                IF .EVENT EQLA .LAST1 THEN EXITLOOP;
;  5913          6030  5
;  5914          6031  5
```

```
;5915          6032  5                 ! Link to the next entry.
;5916          6033  5                 !
;5917          6034  5                 EVENT = .EVENT [EVENT$L_CMD_FLINK];
;5918          6035  4                 END;
;5919          6036  4
;5920          6037  3             END;
;5921          6038  3
;5922          6039  2         END;
;5923          6040  2
;5924          6041  2
;5925          6042  2     ! If an active event was found, meaning we understood the exception,
;5926          6043  2     ! return check to see if a break/step ended (and the user didn't go
;5927          6044  2     ! or step in some DO clause).  If this is the case, go back to the
;5928          6045  2     ! user for commands, otherwise continue.  If an active event wasn't
;5929          6046  2     ! found, return SS$_RESIGNAL....
;5930          6047  2     !
;5931          6048  2     IF .ACTIVE_EVENT
;5932          6049  2     THEN
;5933          6050  3         BEGIN
;5934          6051  3
;5935          6052  3
;5936          6053  3         ! If this was not a trace event, then the EVENT$B_STOP_USER flag will
;5937          6054  3         ! still be on, indicating that we want to accept DEBUG commands.
;5938          6055  3         ! Also, if the user has typed ctrl/Y, DEBUG, then the STOP flag
;5939          6056  3         ! will have been turned on, and in this case we also want to take
;5940          6057  3         ! user commands.
;5941          6058  3         !
;5942          6059  3         IF .EVENT$B_STOP_USER OR
;5943          6060  3            .DBG$GV_CONTROL[DBG$V_CONTROL_STOP]
;5944          6061  3         THEN
;5945          6062  4             BEGIN
;5946          6063  4             LOCAL
;5947          6064  4                 START_PC :  REF VECTOR [, WORD];
;5948          6065  4
;5949          6066  4
;5950          6067  4             ! Turn off RMS cancel Control-O bit so that user can toggle
;5951          6068  4             ! Control-O in the normal fashion.
;5952          6069  4             !
;5953          6070  4             DBG$GL_OUTPRAB [RAB$V_CCO] = FALSE;
;5954          6071  4
;5955          6072  4
;5956          6073  4             ! Mark that the user program has executed so that all screen
;5957          6074  4             ! displays will be updated before we take the next command from
;5958          6075  4             ! the user terminal.  Note that this is suppressed if we just
;5959          6076  4             ! returned normally from a CALL command routine.  Hence the CALL
;5960          6077  4             ! command does not update screen displays.  If we are about to
;5961          6078  4             ! take commands, we also clear the CALL command status flag.
;5962          6079  4             !
;5963          6080  4             IF .DBG$GB_CALL_NORMAL_RET NEQ 2
;5964          6081  4             THEN
;5965          6082  4                 DBG$GV_CONTROL[DBG$V_CONTROL_SCREEN] = TRUE;
;5966          6083  4
;5967          6084  4             IF .DBG$GB_TAKE_CMD THEN DBG$GB_CALL_NORMAL_RET = 0;
;5968          6085  4
;5969          6086  4
;5970          6087  4             ! As long as no commands in the any processed DO clause caused the
;5971          6088  4             ! program to continue (or restart), the command taking flag will
```

```
;5972     6089  4          ! still be turned on, and further commands can be processed from
;5973     6090  4          ! the input device. Otherwise, the while loop below does not
;5974     6091  4          ! execute at all.
;5975     6092  4          !
;5976     6093  4          WHILE .DBG$GB_TAKE_CMD DO
;5977     6094  4              DBG$COMMAND_PROC ();
;5978     6095  4
;5979     6096  3          END;
;5980     6097  3
;5981     6098  3
;5982     6099  3      ! Activate events....
;5983     6100  3      !
;5984     6101  3      DBG$ACTIVATE_EVENTS ();
;5985     6102  3
;5986     6103  3
;5987     6104  3      ! Return the proper status, depending primarily on whether this was
;5988     6105  3      ! an EXCEPTION break/trace, or a normal type.
;5989     6106  3      !
;5990     6107  3      IF .DBG$GB_EXC_BRE_FLAG
;5991     6108  3      THEN
;5992     6109  4          BEGIN
;5993     6110  4          DBG$RUNFRAME[DBG$V_TBIT] = .ORIG_TBIT;
;5994     6111  4
;5995     6112  4
;5996     6113  4          ! Resignal the exception so that handlers can get it
;5997     6114  4          ! (unless the user said GO <address> to go somewhere
;5998     6115  4          ! else).
;5999     6116  4          !
;6000     6117  4          IF NOT .DBG$GB_TAKE_CMD
;6001     6118  4          THEN
;6002     6119  4              IF .DBG$GB_GO_ARG_FLAG
;6003     6120  4               THEN
;6004     6121  4                   RETURN SS$_CONTINUE
;6005     6122  4               ELSE
;6006     6123  4                   RETURN SS$_RESIGNAL
;6007     6124  4          ELSE
;6008     6125  4              RETURN SS$_RESIGNAL
;6009     6126  4          END
;6010     6127  3      ELSE
;6011     6128  3
;6012     6129  3
;6013     6130  3          ! Return to the user.
;6014     6131  3          !
;6015     6132  3          RETURN SS$_CONTINUE;
;6016     6133  2      END;
;6017     6134  2
;6018     6135  2
;6019     6136  2      ! Didn't find an active event, so resignal the exception....
;6020     6137  2      !
;6021     6138  2      DBG$ACTIVATE_EVENTS ();
;6022     6139  2      DBG$RUNFRAME[DBG$V_TBIT] = .ORIG_TBIT;
;6023     6140  2      RETURN SS$_RESIGNAL
;6024     6141  1      END;
```

```
                                                 0FFC 00000          .ENTRY  DBG$EXCEPTION_HANDLER, Save R2,R3,R4,R5,R6,-;  5006
                                                                             R7,R8,R9,R10,R11
                                                   24  C2 00002          SUBL2   #36, SP
    04   AE 00000000G   00                  01     04  EF 00005          EXTZV   #4, #1, DBG$RUNFRAME+68, ORIG_TBIT          5099
                                            52  04     AC  D0 0000F      MOVL    SIGNAL_ARG_PTR, R2                          5104
                                            5A  04     A2  D0 00013      MOVL    4(R2), EXCEPTION_TYPE
                                            5B 00000000G  00  D0 00017    MOVL    DBG$RUNFRAME+64, USERS_PC                   5109
                                6B          01         00  0C 0001E      PROBER  #0, #1, (USERS_PC)                          5110
                                                       04  12 00022      BNEQ    1$
                                                       6E  D4 00024      CLRL    OPCODE
                                                       1D  11 00026      BRB     2$
                                6E                     6B  9A 00028 1$:  MOVZBL  (USERS_PC), OPCODE                         5111
                                    000000FD           6E  D1 0002B      CMPL    OPCODE, #253
                                                       11  1F 00032      BLSSU   2$
                                6B                 02      00  0C 00034  PROBER  #0, #2, (USERS_PC)                         5112
                                                           0B  13 00038  BEQL    2$
                                6E                 01      AB  9A 0003A  MOVZBL  1(USERS_PC), OPCODE                        5113
                                6E 00000100        8F      C0  0003E     ADDL2   #256, OPCODE
                                    00000464       8F          5A  D1 00045 2$:  CMPL    EXCEPTION_TYPE, #1124               5119
                                                               4D  12 0004C  BNEQ    4$
                                50 00000000G                   00  9E 0004E  MOVAB   DBG$PSEUDO_EXIT, R0                   5122
                                50                             5B  D1 00055  CMPL    USERS_PC, R0
                                                               30  13 00058  BEQL    3$
                                50 00000000G                   00  9E 0005A  MOVAB   DBG$TERM_HANDLR, R0                  5123
                                50                             5B  D1 00061  CMPL    USERS_PC, R0
                                                               24  13 00064  BEQL    3$
                                50 00000000G                   00  9E 00066  MOVAB   DBG$USER_EXIT, R0                    5124
                                50                             5B  D1 0006D  CMPL    USERS_PC, R0
                                                               18  13 00070  BEQL    3$
                                50 00000000G                   00  9E 00072  MOVAB   PRIM_HANDL_2, R0                    5125
                                50                             5B  D1 00079  CMPL    USERS_PC, R0
                                                               0C  13 0007C  BEQL    3$
                                50 00000000G                   00  9E 0007E  MOVAB   DBG$PSEUDO_SSI, R0                  5126
                                50                             5B  D1 00085  CMPL    USERS_PC, R0
                                                               11  12 00088  BNEQ    4$
    00000000G   00                                             10  8A 0008A 3$:  BICB2   #16, DBG$RUNFRAME+68               5129
    00000000G   00                      80                     8F  88 00091    BISB2   #128, DBG$GL_OUTPRAB+7               5130
                                                               18  11 00099    BRB     5$                                  5131
    000006A1    8F                                             5A  D1 0009B 4$:  CMPL    EXCEPTION_TYPE, #1697               5139
                                                               12  12 000A2    BNEQ    6$
        FE12    CF                                             00  FB 000A4    CALLS   #0, DBG$DEACTIVATE_EVENTS           5154
          0C    B2                  08                         B2  90 000A9    MOVB    @8(R2), @12(R2)                     5155
        FA4B    CF                                             00  FB 000AE    CALLS   #0, DBG$ACTIVATE_EVENTS             5156
                                                           04FA    31 000B3 5$:  BRW     71$                                 5157
    00028793    8F                                             5A  D1 000B6 6$:  CMPL    EXCEPTION_TYPE, #165779             5169
                                                               03  13 000BD    BEQL    7$
                                                           00B6    31 000BF    BRW     11$
                                50                  08         A2  9E 000C2 7$:  MOVAB   8(R2), SIGARG                      5186
                                54                  14         A0  D0 000C6    MOVL    20(SIGARG), BIT_15_CNT_SSV          5192
                                01                             64  91 000CA    CMPB    (BIT_15_CNT_SSV), #1                5193
                                                               E4  1A 000CD    BGTRU   5$
                                53                  10         A0  D0 000CF    MOVL    16(SIGARG), BIT_15_CNT              5200
                                                               63  95 000D3    TSTB    (BIT_15_CNT)                        5201
                                                               DC  12 000D5    BNEQ    5$
    00000000'   EF                                             01  90 000D7    MOVB    #1, DBG$GB_SET_WATCH_FLAG           5206
                                52                  0C         A0  D0 000DE    MOVL    12(SIGARG), USERS_FP                5207
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                    56 00000000'   EF   D0 000E2          MOVL    EVENT$CMD_QUEUE, EVENT                          ; 5208
                               10   DD 000E9              PUSHL   #16                                             ; 5209
00000000G             00           01   FB 000EB          CALLS   #1, DBG$GET_MEMORY                              ;
              04      B6           60   0E 000F2          INSQUE  (SSINT_ENTRY), @4(EVENT)                        ; 5210
              14      A0           06   B0 000F6          MOVW    #6, 20(SSINT_ENTRY)                             ; 5211
              16      A0           04   90 000FA          MOVB    #4, 22(SSINT_ENTRY)                             ; 5213
              17      A0           04   88 000FE          BISB2   #4, 23(SSINT_ENTRY)                             ; 5214
              08      A0           50   D0 00102          MOVL    SSINT_ENTRY, 8(SSINT_ENTRY)                     ; 5215
              0C      A0           50   D0 00106          MOVL    SSINT_ENTRY, 12(SSINT_ENTRY)                    ; 5216
              24      A0           52   D0 0010A          MOVL    USERS_FP, 36(SSINT_ENTRY)                       ; 5217
              05      A2       80  8F   88 0010E          BISB2   #128, 5(USERS_FP)                               ; 5218
              1C      A0           54   D0 00113          MOVL    BIT_15_CNT_SSV, 28(SSINT_ENTRY)                 ; 5219
              2C      A0           53   D0 00117          MOVL    BIT_15_CNT, 44(SSINT_ENTRY)                     ; 5220
              20      A0       10  A2   D0 0011B          MOVL    16(USERS_FP), 32(SSINT_ENTRY)                   ; 5221
00000000'     EF           10  A2   D0 00120              MOVL    16(USERS_FP), WATCH_PC                          ; 5222
                               63   96 00128              INCB    (BIT_15_CNT)                                    ; 5223
                    01         63   91 0012A              CMPB    (BIT_15_CNT), #1                                ; 5224
                               84   12 0012D              BNEQ    5$                                              ;
                    52 00000000'   EF   D0 0012F          MOVL    EVENT$PAGE_QUEUE, PAGE_ENTRY                    ; 5227
                    50 00000000'   EF   9E 00136 8$:      MOVAB   EVENT$PAGE_QUEUE, R0                            ; 5228
                    50             52   D1 0013D          CMPL    PAGE_ENTRY, R0                                  ;
                                   03   12 00140          BNEQ    9$                                              ;
                                 046B   31 00142          BRW     71$                                             ;
              1C    AE       08  A2   D0 00145 9$:      MOVL    8(PAGE_ENTRY), ADDRESS                          ; 5230
              20    AE       08  A2   D0 0014A          MOVL    8(PAGE_ENTRY), ADDRESS+4                        ; 5231
                               7E   D4 0014F              CLRL    -(SP)                                           ; 5234
                    7E         0E  A2   9A 00151          MOVZBL  14(PAGE_ENTRY), -(SP)                           ;
                               7E   7C 00155              CLRQ    -(SP)                                           ;
                               2C   AE   9F 00157         PUSHAB  ADDRESS                                         ;
00000000G             00           05   FB 0015A          CALLS   #5, SYS$SETPRT                                  ;
                      0F           50   E8 00161          BLBS    R0, 10$                                         ;
                         00028C4   8F   DD 00164          PUSHL   #165060                                         ; 5236
00000000G             00           01   FB 0016A          CALLS   #1, LIB$SIGNAL                                  ;
                               C3   11 00171              BRB     8$                                              ;
                    52             62   D0 00173 10$:     MOVL    (PAGE_ENTRY), PAGE_ENTRY                        ; 5238
                               BE   11 00176              BRB     8$                                              ; 5228
                       00000000G   00   94 00178 11$:     CLRB    DBG$GB_EXC_BRE_FLAG                             ; 5248
                               59   D4 0017E              CLRL    ACTIVE_EVENT                                    ; 5254
00000000'     EF                   01   D0 00180          MOVL    #1, TYPE_SOURCE                                 ; 5260
                       00000000'   EF   94 00187          CLRB    EVENT$B_STOP_USER                               ; 5267
00000000G             00           01   90 0018D          MOVB    #1, DBG$GB_TAKE_CMD                             ; 5274
                 FD22 CF           00   FB 00194          CALLS   #0, DBG$DEACTIVATE_EVENTS                       ; 5280
0000046C      8F                   5A   D1 00199          CMPL    EXCEPTION_TYPE, #1T32                           ; 5281
                                   0A   12 001A0          BNEQ    12$                                             ;
00000000'     EF                   01   90 001A2          MOVB    #1, EVENT$B_STOP_USER                           ; 5295
                    59             01   D0 001A9          MOVL    #1, ACTIVE_EVENT                                ; 5296
                       00000000G   00   D5 001AC 12$:     TSTL    DBG$RUNFRAME+64                                 ; 5302
                                   26   12 001B2          BNEQ    15$                                             ;
                    56 00000000'   EF   9E 001B4          MOVAB   EVENT$CMD_QUEUE, EVENT                          ; 5305
                    56             66   D0 001BB 13$:     MOVL    (EVENT), EVENT                                  ; 5308
                    50 00000000'   EF   9E 001BE          MOVAB   EVENT$CMD_QUEUE, R0                             ; 5309
                    50             56   D1 001C5          CMPL    EVENT, R0                                       ;
                                   03   12 001C8          BNEQ    14$                                             ;
                                 0378   31 001CA          BRW     65$                                             ;
                    03         14  A6   91 001CD 14$:     CMPB    20(EVENT), #3                                   ; 5310
                                   E8   12 001D1          BNEQ    13$                                             ;
              17    A6       80  8F   88 001D3          BISB2   #128, 23(EVENT)                                 ; 5312
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                                    E1  11 001D8          BRB     13$                                             ; 5306
                00000414    8F      5A  D1 001DA 15$:     CMPL    EXCEPTION_TYPE, #1044                           ; 5327
                                    1E  13 001E1          BEQL    16$
                00000454    8F      5A  D1 001E3          CMPL    EXCEPTION_TYPE, #1108
                                    15  13 001EA          BEQL    16$
                00000464    8F      5A  D1 001EC          CMPL    EXCEPTION_TYPE, #1124
                                    0C  13 001F3          BEQL    16$
                0000046C    8F      5A  D1 001F5          CMPL    EXCEPTION_TYPE, #1132
                                    03  13 001FC          BEQL    16$
                                  02B8  31 001FE          BRW     58$
                0000046C    8F      5A  D1 00201 16$:     CMPL    EXCEPTION_TYPE, #1132                           ; 5328
                                    0B  12 00208          BNEQ    17$
      03 00000000G  00              01  E0 0020A          BBS     #1, DBG$GV_CONTROL+1, 17$                       ; 5329
                                  02EE  31 00212          BRW     62$
              08    AE 00000000'    EF  D0 00215 17$:     MOVL    EVENT$CMD_QUEUE+4, LAST1                        ; 5345
                    56 00000000'    EF  D0 0021D          MOVL    EVENT$CMD_QUEUE, EVENT                          ; 5351
                    50 00000000'    EF  9E 00224 18$:     MOVAB   EVENT$CMD_QUEUE, R0                             ; 5352
                    50              56  D1 0022B          CMPL    EVENT, R0
                                    03  12 0022E          BNEQ    19$
                                  027E  31 00230          BRW     57$
                    58        14    A6  9E 00233 19$:     MOVAB   20(EVENT), R8                                   ; 5358
                                    68  D5 00237          TSTL    (R8)
                                    16  19 00239          BLSS    20$
                    05              68  91 0023B          CMPB    (R8), #5                                        ; 5365
                                    14  12 0023E          BNEQ    21$
                 03     A8        80    8F  88 00240          BISB2   #128, 3(R8)                                     ; 5376
            00000464    8F              5A  D1 00245          CMPL    EXCEPTION_TYPE, #1124                           ; 5381
                                    03  12 0024C          BNEQ    20$
                    59              01  D0 0024E          MOVL    #1, ACTIVE_EVENT                                ; 5383
                                  0251  31 00251 20$:     BRW     56$                                             ; 5365
          02              00        01    AB  8F 00254 21$:     CASEB   1(R8), #0, #2                                   ; 5398
      023E              018A          0006      00259 22$:     .WORD   23$-22$,-
                                                                      40$-22$,-
                                                                      55$-22$
            04              00        02    A8  8F 0025F 23$:     CASEB   2(R8), #0, #4                           ; 5406
  00B6      000C            0233          0233      00264 24$:     .WORD   55$-24$,-
                                          00C2      0026C                 55$-24$,-
                                                                          25$-24$,-
                                                                          31$-24$,-
                                                                          33$-24$
                                    5C  11 0026E          BRB     27$
                    0E 00000000'    EF  E8 00270 25$:     BLBS    SKIP_ACCVIOS, 26$                               ; 5430
                    07 00000000'    EF  E8 00277          BLBS    SKIP_WATCHES, 26$                               ; 5431
                    47 00000000'    EF  E9 0027E          BLBC    DBG$GB_SET_WATCH_FLAG, 27$                      ; 5432
                    59              01  D0 00285 26$:     MOVL    #1, ACTIVE_EVENT                                ; 5441
                              34    A6  9F 00288          PUSHAB  52(EVENT)                                       ; 5454
                 00000000G  00              01  FB 0028B          CALLS   #1, DBG$DATA_LENGTH
                    54              50  D0 00292          MOVL    R0, LENGTH
                    50        07    A4  9E 00295          MOVAB   7(R4), R0                                       ; 5455
          54        50        FD    8F  78 00299          ASHL    #-3, R0, LENGTH
                                    56  DD 0029E          PUSHL   EVENT                                           ; 5456
                 0000V  CF              01  FB 002A0          CALLS   #1, GET_WATCH_POINT_VALUE
            00000000'   EF        30    A6  D0 002A5          MOVL    48(EVENT), OLDVALUE                             ; 5458
                    50 00000000'    EF  D0 002AD          MOVL    OLDVALUE, R0                                    ; 5467
                    55 00000000'    EF  D0 002B4          MOVL    NEWVALUE, R5                                    ; 5469
      20    A5        20    A0              54  29 002BB          CMPC3   LENGTH, 32(R0), 32(R5)
                                    0C  12 002C1          BNEQ    28$
```

```
                                55   DD 002C3          PUSHL   R5                                                    ; 5473
                00000000G       00   01   FB 002C5          CALLS   #1, DBG$NFREE_DESC
                                     01C8 31 002CC 27$:     BRW     55$
                00000000'       07   EF   E8 002CF 28$:     BLBS    SKIP_WATCHES, 29$                             ; 5480
                00000000'       0B   EF   E9 002D6          BLBC    DBG$GB_SET_WATCH_FLAG, 30$                    ; 5481
                00000000'  EF   00000000' EF   D0 002DD 29$:     MOVL    WATCH_PC, ACCVIO_PC                           ; 5483
                                     04   AC   DD 002E8 30$:     PUSHL   SIGNAL_ARG_PTR                                ; 5486
                                          56   DD 002EB          PUSHL   EVENT                                         ; 5485
                          0000V CF        02   FB 002ED          CALLS   #2, DBG$PROCESS_EVENT
                            0C  AE        50   D0 002F2          MOVL    R0, STATUS
                                58 00000000' EF   D0 002F6          MOVL    NEWVALUE, R8                              ; 5496
                                50 00000000' EF   D0 002FD          MOVL    OLDVALUE, R0                              ; 5497
                20  A0      20  A8        54   28 00304          MOVC3   LENGTH, 32(R8), 32(R0)
                                          58   DD 0030A          PUSHL   R8                                            ; 5499
                00000000G       00   01   FB 0030C          CALLS   #1, DBG$NFREE_DESC
                                B5        0C   AE   E9 00313          BLBC    STATUS, 27$                               ; 5506
                                          0197 31 00317          BRW     57$                                       ; 5508
                                5B        2C   A6   D1 0031A 31$:     CMPL    44(EVENT), USERS_PC                       ; 5524
                                          AC   12 0031E          BNEQ    27$
                                59             01   D0 00320          MOVL    #1, ACTIVE_EVENT                          ; 5535
                                          0164 31 00323 32$:     BRW     54$                                       ; 5538
                                01             68   91 00326 33$:     CMPB    (R8), #1                                  ; 5563
                                          3C   1A 00329          BGTRU   34$
                                5B        2C   A6   D1 0032B          CMPL    44(EVENT), USERS_PC                       ; 5575
                                          9B   12 0032F          BNEQ    27$
                00000454        8F             5A   D1 00331          CMPL    EXCEPTION_TYPE, #1108                     ; 5576
                                          92   13 00338          BEQL    27$
                                59             01   D0 0033A          MOVL    #1, ACTIVE_EVENT                          ; 5583
                                          10   DD 0033D          PUSHL   #16                                           ; 5596
                00000000G       00   01   FB 0033F          CALLS   #1, DBG$GET_MEMORY
                                57             50   D0 00346          MOVL    R0, SKIPS_ENTRY
                          04    B6             67   0E 00349          INSQUE  (SKIPS_ENTRY), @4(EVENT)                  ; 5598
                          14    A7             04   B0 0034D          MOVW    #4, 20(SKIPS_ENTRY)                       ; 5607
                          16    A7             04   90 00351          MOVB    #4, 22(SKIPS_ENTRY)                       ; 5611
                          17    A7             04   88 00355          BISB2   #4, 23(SKIPS_ENTRY)                       ; 5613
                                          56   DD 00359          PUSHL   EVENT                                         ; 5615
                                          57   DD 0035B          PUSHL   SKIPS_ENTRY
                          0000V CF        02   FB 0035D          CALLS   #2, INSQUE1
                                     24   A7   D4 00362          CLRL    36(SKIPS_ENTRY)                           ; 5621
                                          4E   11 00365          BRB     38$                                       ; 5557
                                03             68   91 00367 34$:     CMPB    (R8), #3                                  ; 5629
                                          4C   1F 0036A          BLSSU   39$
                                04             68   91 0036C          CMPB    (R8), #4
                                          47   1A 0036F          BGTRU   39$
                00000454        8F             5A   D1 00371          CMPL    EXCEPTION_TYPE, #1108                     ; 5634
                                          2A   12 00378          BNEQ    37$
                                04             6E   D1 0037A          CMPL    OPCODE, #4                                ; 5639
                                          09   12 0037D          BNEQ    35$
                                          56   DD 0037F          PUSHL   EVENT                                         ; 5641
                          0000V CF        01   FB 00381          CALLS   #1, MATCH_RIGHT_CALL_FRAME
                                          02   11 00386          BRB     36$
                                          50   D4 00388 35$:     CLRL    RIGHT_FP_FLAG                             ; 5643
                                28        50   E9 0038A 36$:     BLBC    RIGHT_FP_FLAG, 38$                        ; 5645
                                59             01   D0 0038D          MOVL    #1, ACTIVE_EVENT                          ; 5648
                8E        19    A6             02   E1 00390          BBC     #2, 25(EVENT), 32$                        ; 5655
                          19    A6             04   8A 00395          BICB2   #4, 25(EVENT)                             ; 5658
                          01    A8             01   90 00399          MOVB    #1, 1(R8)                                 ; 5659
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                02  A8        1B   A6  90 0039D          MOVB    27(EVENT), 2(R8)                                ; 5660
                                   11  11 003A2          BRB     38$                                             ; 5655
            00000464  8F           5A  D1 003A4 37$:     CMPL    EXCEPTION_TYPE, #1124                           ; 5677
                                   61  12 003AB          BNEQ    45$                                             ;
        53      19  A6             02  E1 003AD          BBC     #2, 25(EVENT), 43$                              ; 5678
                59                 01  D0 003B2          MOVL    #1, ACTIVE_EVENT                                ; 5679
                                00DF  31 003B5 38$:       BRW     55$                                             ; 5678
                06                 68  91 003B8 39$:     CMPB    (R8), #6                                        ; 5690
                                   F8  12 003BB          BNEQ    38$                                             ;
                24  A6 00000000G   00  D1 003BD          CMPL    DBG$RUNFRAME+56, 36(EVENT)                      ; 5697
                                   EE  12 003C5          BNEQ    38$                                             ;
                04                 6E  D1 003C7          CMPL    OPCODE, #4                                      ; 5698
                                   E9  12 003CA          BNEQ    38$                                             ;
                03  A8        80    8F  88 003CC          BISB2   #128, 3(R8)                                     ; 5701
                59                 01  D0 003D1          MOVL    #1, ACTIVE_EVENT                                ; 5702
                    00000000'      EF  94 003D4          CLRB    EVENT$B_STOP_USER                               ; 5703
                    00000000G      00  94 003DA          CLRB    DBG$GB_TAKE_CMD                                 ; 5704
                                00CE  31 003E0          BRW     57$                                             ; 5700
            00000464  8F           5A  D1 003E3 40$:     CMPL    EXCEPTION_TYPE, #1124                           ; 5723
                                   09  13 003EA          BEQL    41$                                             ;
            0000046C  8F           5A  D1 003EC          CMPL    EXCEPTION_TYPE, #1132                           ;
                                   07  12 003F3          BNEQ    42$                                             ;
        16      19  A6             02  E1 003F5 41$:     BBC     #2, 25(EVENT), 46$                              ; 5724
                                   0E  11 003FA          BRB     44$                                             ; 5726
            00000414  8F           5A  D1 003FC 42$:     CMPL    EXCEPTION_TYPE, #1044                           ; 5733
                                   B0  12 00403          BNEQ    38$                                             ;
        AB      19  A6             02  E1 00405 43$:     BBC     #2, 25(EVENT), 38$                              ; 5734
                5B        2C       A6  D1 0040A 44$:     CMPL    44(EVENT), USERS_PC                             ; 5736
                                   A5  12 0040E 45$:     BNEQ    38$                                             ;
                59                 01  D0 00410 46$:     MOVL    #1, ACTIVE_EVENT                                ; 5753
            00000414  8F           5A  D1 00413          CMPL    EXCEPTION_TYPE, #1044                           ; 5759
                                   04  12 0041A          BNEQ    47$                                             ;
                19  A6             04  8A 0041C          BICB2   #4, 25(EVENT)                                   ; 5761
                            18     A6  95 00420 47$:     TSTB    24(EVENT)                                       ; 5771
                                   0D  18 00423          BGEQ    48$                                             ;
            40000000  8F 00000000G 00  D1 00425          CMPL    DBG$RUNFRAME+64, #1073741824                    ; 5772
                                   65  18 00430          BGEQ    55$                                             ;
                08          02     A8  91 00432 48$:     CMPB    2(R8), #8                                       ; 5776
                                   52  13 00436          BEQL    54$                                             ;
                05          02     A8  91 00438          CMPB    2(R8), #5                                       ; 5779
                                   06  1F 0043C          BLSSU   49$                                             ;
                06          02     A8  91 0043E          CMPB    2(R8), #6                                       ;
                                   06  1B 00442          BLEQU   50$                                             ;
                09          02     A8  91 00444 49$:     CMPB    2(R8), #9                                       ;
                                   07  12 00448          BNEQ    51$                                             ;
        48      28  B6             6E  E1 0044A 50$:     BBC     OPCODE, @40(EVENT), 55$                         ; 5788
                                   39  11 0044F          BRB     54$                                             ;
                07          02     A8  91 00451 51$:     CMPB    2(R8), #7                                       ; 5791
                                   33  12 00455          BNEQ    54$                                             ;
                34  A6             5B  D1 00457          CMPL    USERS_PC, 52(EVENT)                             ; 5803
                                   06  1F 0045B          BLSSU   52$                                             ;
                38  A6             5B  D1 0045D          CMPL    USERS_PC, 56(EVENT)                             ; 5805
                                   34  1B 00461          BLEQU   55$                                             ;
                            10     AE  D4 00463 52$:     CLRL    MODRST                                          ; 5823
                            10     AE  9F 00466          PUSHAB  MODRST                                          ; 5829
                            38     A6  9F 00469          PUSHAB  56(EVENT)                                       ;
                            34     A6  9F 0046C          PUSHAB  52(EVENT)                                       ; 5828
```

```
                        20   AE  9F 0046F          PUSHAB  STMTNO                          ; 5824
                        28   AE  9F 00472          PUSHAB  LINENO                         ;
                             5B  DD 00475          PUSHL   USERS_PC                       ; 5829
              00000000G      00  06 FB 00477          CALLS   #6, DBG$PC_TO_LINE_LOOKUP   ;
                             04  50 E8 0047E          BLBS    STATUS, 53$                ; 5831
                    34       A6  01 7D 00481          MOVQ    #1, 52(EVENT)              ; 5833
                             02  50 D1 00485 53$:      CMPL    STATUS, #2                 ; 5853
                                 0D 13 00488          BEQL    55$                        ;
                        04   AC  DD 0048A 54$:        PUSHL   SIGNAL_ARG_PTR             ; 5871
                             56  DD 0048D            PUSHL   EVENT                      ; 5870
                  0000V      CF  02 FB 0048F          CALLS   #2, DBG$PROCESS_EVENT      ;
                             1A  50 E8 00494          BLBS    R0, 57$                    ;
              00000000G      00  00 FB 00497 55$:      CALLS   #0, DBG$REL_TEMPMEM        ; 5894
              00000000G      00  00 FB 0049E          CALLS   #0, DBG$RST_TEMP_RELEASE   ; 5895
                    08       AE  56 D1 004A5 56$:      CMPL    EVENT, LASTT               ; 5905
                                 06 13 004A9          BEQL    57$                        ;
                             56  66 D0 004AB          MOVL    (EVENT), EVENT             ; 5910
                            FD73 31 004AE            BRW     18$                        ; 5352
                 00000000'   EF  7C 004B1 57$:        CLRQ    SKIP_ACCVIOS               ; 5916
                             4A  11 004B7            BRB     62$                        ; 5328
                             0C  5A D1 004B9 58$:      CMPL    EXCEPTION_TYPE, #12        ; 5921
                                 45 12 004BC          BNEQ    62$                        ;
                          3E 00000000'   EF  E8 004BE          BLBS    SKIP_ACCVIOS, 62$  ; 5934
                          50       04   AC  D0 004C5          MOVL    SIGNAL_ARG_PTR, R0  ; 5941
                    52    0C   A0 000001FF 8F  CB 004C9          BICL3   #511, T2(R0), PAGE_ADDRESS
                          50 00000000'   EF  D0 004D2          MOVL    EVENT$PAGE_QUEUE, PAGE_ENTRY ; 5942
                          51 00000000'   EF  9E 004D9 59$:      MOVAB   EVENT$PAGE_QUEUE, R1 ; 5947
                          51             50  D1 004E0          CMPL    PAGE_ENTRY, R1      ;
                                         17  13 004E3          BEQL    61$                 ;
                             52       08   A0  D1 004E5          CMPL    8(PAGE_ENTRY), PAGE_ADDRESS ; 5949
                                           0C  12 004E9          BNEQ    60$                 ;
                    00000000'   EF         01  D0 004EB          MOVL    #1, SKIP_ACCVIOS    ; 5957
                                59         01  D0 004F2          MOVL    #1, ACTIVE_EVENT    ; 5958
                                           05  11 004F5          BRB     61$                 ; 5956
                                50         60  D0 004F7 60$:      MOVL    (PAGE_ENTRY), PAGE_ENTRY ; 5963
                                           DD  11 004FA          BRB     59$                 ; 5947
                    00000000'   EF         5B  D0 004FC 61$:      MOVL    USERS_PC, ACCVIO_PC ; 5971
                                42         59  E8 00503 62$:      BLBS    ACTIVE_EVENT, 66$   ; 5983
                                56 00000000'   EF  D0 00506          MOVL    EVENT$CMD_QUEUE, EVENT ; 5990
                                50 00000000'   EF  9E 0050D 63$:      MOVAB   EVENT$CMD_QUEUE, R0 ; 5991
                                50             56  D1 00514          CMPL    EVENT, R0           ;
                                               2C  13 00517          BEQL    65$                 ;
                                   17       A6  95 00519          TSTB    23(EVENT)           ; 5997
                                               1C  19 0051C          BLSS    64$                 ;
                                   02       15  A6  91 0051E          CMPB    21(EVENT), #2       ; 6003
                                               16  12 00522          BNEQ    64$                 ;
                                59             01  D0 00524          MOVL    #1, ACTIVE_EVENT    ; 6010
                  00000000G      00             01  90 00527          MOVB    #1, DBG$GB_EXC_BRE_FLAG ; 6015
                                   04       AC  DD 0052E          PUSHL   SIGNAL_ARG_PTR      ; 6020
                                               56  DD 00531          PUSHL   EVENT           ;
                  0000V      CF                 02  FB 00533          CALLS   #2, DBG$PROCESS_EVENT ;
                                               0B  11 00538          BRB     65$                 ; 6005
                    08       AE                 56  D1 0053A 64$:      CMPL    EVENT, LAST1        ; 6029
                                               05  13 0053E          BEQL    65$                 ;
                                56             66  D0 00540          MOVL    (EVENT), EVENT      ; 6034
                                               C8  11 00543          BRB     63$                 ; 5991
                                6C             59  E9 00545 65$:      BLBC    ACTIVE_EVENT, 72$   ; 6048
```

```
                          08 00000000'   EF   E8 00548 66$:    BLBS    EVENT$B_STOP_USER, 67$                          ; 6059
                       35 00000000G 00   01   E1 0054F         BBC     #1, DBG$GV_CONTROL+1, 70$                       ; 6060
                          00000000G 00      80   8F   8A 00557 67$:    BICB2   #128, DBG$GL_OUTPRAB+7                  ; 6070
                          02 00000000G 00   91   0055F         CMPB    DBG$GB_CALL_NORMAL_RET, #2                      ; 6080
                                            07   13   00566         BEQL    68$                                     ;
                             00000000G 00   08   88   00568         BISB2   #8, DBG$GV_CONTROL+1                    ; 6082
                          16 00000000G 00   E9   0056F 68$:    BLBC    DBG$GB_TAKE_CMD, 70$                            ; 6084
                             00000000G 00   94   00576         CLRB    DBG$GB_CALL_NORMAL_RET                          ;
                          09 00000000G 00   E9   0057C 69$:    BLBC    DBG$GB_TAKE_CMD, 70$                            ; 6093
                             00000000G 00   FB   00583         CALLS   #0, DBG$COMMAND_PROC                            ; 6094
                                            F0   11   0058A         BRB     69$                                     ;
                                F56D   CF   00   FB   0058C 70$:    CALLS   #0, DBG$ACTIVATE_EVENTS                 ; 6101
                          18 00000000G 00   E9   00591         BLBC    DBG$GB_EXC_BRE_FLAG, 71$                        ; 6107
00000000G  00        01          04      04   AE   F0   00598         INSV    ORIG_TBIT, #4, #1, DBG$RUNFRAME+68      ; 6110
                          1A 00000000G 00   E8   005A2         BLBS    DBG$GB_TAKE_CMD, 73$                            ; 6117
                          13 00000000G 00   E9   005A9         BLBC    DBG$GB_GO_ARG_FLAG, 73$                         ; 6119
                          50            01   D0   005B0 71$:    MOVL    #1, R0                                  ; 6132
                                            04   005B3         RET                                             ;
                                F545   CF   00   FB   005B4 72$:    CALLS   #0, DBG$ACTIVATE_EVENTS                 ; 6138
00000000G  00        01          04      04   AE   F0   005B9         INSV    ORIG_TBIT, #4, #T, DBG$RUNFRAME+68      ; 6139
                          50        0918   8F   3C   005C3 73$:    MOVZWL  #2328, R0                               ; 6140
                                            04   005C8         RET                                             ; 6141

; Routine Size:  1481 bytes,    Routine Base:  DBG$CODE + 1E6F
```

```
;  6026          6142  1 GLOBAL ROUTINE DBG$PROCESS_EVENT(EVENT, SIGNAL_ARG_PTR) =
;  6027          6143  1 !
;  6028          6144  1 ! FUNCTIONAL DESCRIPTION:
;  6029          6145  1 !
;  6030          6146  1 !       An eventpoint has been determined to be active.  It must now be
;  6031          6147  1 !       processed.  This includes handling any /AFTER, WHEN, and DO.
;  6032          6148  1 !
;  6033          6149  1 !
;  6034          6150  1 ! FORMAL PARAMETERS:
;  6035          6151  1 !
;  6036          6152  1 !       EVENT : The address of the event entry.
;  6037          6153  1 !
;  6038          6154  1 !
;  6039          6155  1 ! IMPLICIT OUTPUTS:
;  6040          6156  1 !
;  6041          6157  1 !       Processing the event may involve the execution of user commands.
;  6042          6158  1 !
;  6043          6159  1 !
;  6044          6160  1 ! ROUTINE VALUE:
;  6045          6161  1 !
;  6046          6162  1 !       TRUE is a GO, STEP, CONTINUE, or EXIT command was executed within
;  6047          6163  1 !       a DO clause.
;  6048          6164  1 !
;  6049          6165  1 !
;  6050          6166  1 ! SIDE EFFECTS:
;  6051          6167  1 !
;  6052          6168  1 !       Any number of things.
;  6053          6169  1 !
;  6054          6170  2     BEGIN
;  6055          6171  2
;  6056          6172  2     MAP
;  6057          6173  2         EVENT :             REF EVENT$EVENT_DESCRIPTOR, ! Event entry pointer
;  6058          6174  2         SIGNAL_ARG_PTR :    REF BLOCK[,BYTE];
;  6059          6175  2
;  6060          6176  2     BUILTIN CALLG;
;  6061          6177  2     EXTERNAL ROUTINE dbg$final_handl;
;  6062          6178  2
;  6063          6179  2     LOCAL
;  6064          6180  2         DO_LIST_ENTRY : REF EVENT$DO_LIST_DESCRIPTOR, ! DO LIST descriptor
;  6065          6181  2         MESSAGE_VECT,           ! Message Vector
;  6066          6182  2         SAVED_CISHEAD,          ! Saved pointer to DBG$GL_CISHEAD
;  6067          6183  2         SAVED_LEVEL,            ! Saved level of CIS nesting
;  6068          6184  2         EXCEPTION_TYPE;
;  6069          6185  2
;  6070          6186  2
;  6071          6187  2     ENABLE dbg$final_handl;
;  6072          6188  2
;  6073          6189  2     ! Save the exception type (name);
;  6074          6190  2     !
;  6075          6191  2     EXCEPTION_TYPE = .SIGNAL_ARG_PTR [CHF$L_SIG_NAME];
;  6076          6192  2
;  6077          6193  2
;  6078          6194  2     ! If this is a skips-entry, 'delete' this one and point to the parent.
;  6079          6195  2     ! It is the one we want to actually process.
;  6080          6196  2     !
;  6081          6197  2     IF .EVENT [EVENT$B_CMD_TYPE] EQLU EVENT$K_TYPE_SKIPS
;  6082          6198  2     THEN
```

```
;  6083          6199  3          BEGIN
;  6084          6200  3          EVENT [EVENT$V_DELETED] = TRUE;
;  6085          6201  3          WHILE .EVENT [EVENT$B_CMD_TYPE] EQLU EVENT$K_TYPE_SKIPS DO
;  6086          6202  3              EVENT = .EVENT [EVENT$L_EXC_FLINK];
;  6087          6203  2          END;
;  6088          6204  2
;  6089          6205  2
;  6090          6206  2      ! If this is a steps-event, process it differently from the others.
;  6091          6207  2      !
;  6092          6208  2      IF .EVENT [EVENT$B_CMD_TYPE] EQLU EVENT$K_TYPE_STEPS
;  6093          6209  2      THEN
;  6094          6210  3          BEGIN
;  6095          6211  3
;  6096          6212  3
;  6097          6213  3          ! Decrement the step (after) count.
;  6098          6214  3          !
;  6099          6215  5          IF ((EVENT [EVENT$L_AFTER_COUNT] =
;  6100          6216  5              .EVENT [EVENT$L_AFTER_COUNT] - 1
;  6101          6217  4              ) EQLU 0
;  6102          6218  4             )
;  6103          6219  3          THEN
;  6104          6220  3
;  6105          6221  3
;  6106          6222  3              ! The stepping is complete....
;  6107          6223  3              !
;  6108          6224  4              BEGIN
;  6109          6225  4
;  6110          6226  4              ! Special case for STEP/EXCEPTION.
;  6111          6227  4              !
;  6112          6228  4              IF .EVENT[EVENT$B_CMD_KIND] EQL EVENT$K_KIND_EXC
;  6113          6229  4              THEN
;  6114          6230  5                  BEGIN
;  6115          6231  5
;  6116          6232  5
;  6117          6233  5                  ! This is an exception break or trace, so flag it.
;  6118          6234  5                  !
;  6119          6235  5                  DBG$GB_EXC_BRE_FLAG = TRUE;
;  6120          6236  5
;  6121          6237  5
;  6122          6238  5                  ! Format and output the message.
;  6123          6239  5                  !
;  6124          6240  5                  DBG$PUTMSG (.SIGNAL_ARG_PTR);
;  6125          6241  4                  END;
;  6126          6242  4
;  6127          6243  4              ! Announce the step.
;  6128          6244  4              !
;  6129          6245  4              ANNOUNCE_EVENT (.EVENT, .EXCEPTION_TYPE);
;  6130          6246  4
;  6131          6247  4
;  6132          6248  4              ! Delete the step.
;  6133          6249  4              !
;  6134          6250  4              EVENT [EVENT$V_DELETED] = TRUE;
;  6135          6251  4
;  6136          6252  4
;  6137          6253  4              ! DEBUG will stop for commands.
;  6138          6254  4              !
;  6139          6255  4              EVENT$B_STOP_USER = TRUE;
```

```
;  6140          6256  3              END;
;  6141          6257  3
;  6142          6258  3
;  6143          6259  3          ! Return - we haven't executed any new commands....
;  6144          6260  3          !
;  6145          6261  3          RETURN FALSE;
;  6146          6262  2          END;
;  6147          6263  2
;  6148          6264  2
;  6149          6265  2      ! This is not a steps (or skips) entry.  Process normally.
;  6150          6266  2      ! Update the /AFTER count.  If it becomes equal to 0, then the entry is
;  6151          6267  2      ! now active.
;  6152          6268  2      !
;  6153          6269  4      IF ((EVENT [EVENT$L_AFTER_COUNT] =
;  6154          6270  4           .EVENT [EVENT$L_AFTER_COUNT] - 1
;  6155          6271  3          ) EQLU 0
;  6156          6272  3         )
;  6157          6273  2      THEN
;  6158          6274  3          BEGIN
;  6159          6275  3
;  6160          6276  3          ! We've passed the /AFTER test.  Now set the /AFTER count to 1.
;  6161          6277  3          !
;  6162          6278  3          EVENT [EVENT$L_AFTER_COUNT] = 1;
;  6163          6279  3
;  6164          6280  3          ! If there is a WHEN expression, procees it....
;  6165          6281  3          !
;  6166          6282  3          IF .EVENT [EVENT$L_WHEN] NEQA 0
;  6167          6283  3          THEN
;  6168          6284  4              BEGIN
;  6169          6285  4              PARSE_WHEN_CONDITION(.EVENT);
;  6170          6286  4
;  6171          6287  4              ! If the condition is false, return FALSE.
;  6172          6288  4              !
;  6173          6289  4              IF NOT .WHEN_CONDITION
;  6174          6290  4              THEN
;  6175          6291  4                  RETURN FALSE;
;  6176          6292  4              END;
;  6177          6293  3
;  6178          6294  3          ! If this event is temporary, flag it as deleted now.  This shouldn't
;  6179          6295  3          ! affect any further processing, but the entry will be deleted when
;  6180          6296  3          ! we go off to the user program.
;  6181          6297  3          !
;  6182          6298  3          IF .EVENT [EVENT$V_ONCE_ONLY]
;  6183          6299  3          THEN
;  6184          6300  3              EVENT [EVENT$V_DELETED] = TRUE;
;  6185          6301  3
;  6186          6302  3
;  6187          6303  3          ! Flag a stop, if this is a BREAK.
;  6188          6304  3          !
;  6189          6305  3          IF .EVENT [EVENT$B_CMD_TYPE] EQLU EVENT$K_TYPE_BREAK OR
;  6190          6306  3             .EVENT [EVENT$B_CMD_TYPE] EQLU EVENT$K_TYPE_WATCH
;  6191          6307  3          THEN
;  6192          6308  3              EVENT$B_STOP_USER = TRUE;
;  6193          6309  3
;  6194          6310  3
;  6195          6311  3
;  6196          6312  3
```

```
; 6197          6313  3
; 6198          6314
; 6199          6315          ! Case on the kind of event entry, to determine how to process it.
; 6200          6316          !
; 6201          6317          CASE .EVENT [EVENT$B_CMD_KIND]
; 6202          6318          FROM EVENT$K_KIND_ACC TO EVENT$K_KIND_EXC OF
; 6203          6319              SET
; 6204          6320              [EVENT$K_KIND_ACC]:
; 6205          6321                  ANNOUNCE_EVENT (.EVENT, .EXCEPTION_TYPE);
; 6206          6322
; 6207          6323              [EVENT$K_KIND_INS]:
; 6208          6324                  ANNOUNCE_EVENT (.EVENT, .EXCEPTION_TYPE);
; 6209          6325
; 6210          6326              [EVENT$K_KIND_EXC]:
; 6211          6327  4               BEGIN
; 6212          6328  4
; 6213          6329  4
; 6214          6330  4               ! This is an exception break or trace, so flag it.
; 6215          6331  4               !
; 6216          6332  4               DBG$GB_EXC_BRE_FLAG = TRUE;
; 6217          6333  4
; 6218          6334  4
; 6219          6335  4               ! Format and output the message.
; 6220          6336  4               !
; 6221          6337  4               DBG$PUTMSG (.SIGNAL_ARG_PTR);
; 6222          6338  4
; 6223          6339  4
; 6224          6340  4               ! Announce the break.
; 6225          6341  4               !
; 6226          6342  4               ANNOUNCE_EVENT (.EVENT, .EXCEPTION_TYPE);
; 6227          6343  3               END;
; 6228          6344  3          TES;
; 6229          6345  3
; 6230          6346  3
; 6231          6347  3      ! If there is a DO associated with this entry, do it.
; 6232          6348  3      !
; 6233          6349  3      IF .EVENT [EVENT$L_DO] NEQA 0
; 6234          6350  3      THEN
; 6235          6351  4          BEGIN
; 6236          6352  4
; 6237          6353  4
; 6238          6354  4          ! We need a local pointer to the DO command string.
; 6239          6355  4          !
; 6240          6356  4          LOCAL
; 6241          6357  4              DO_LENGTH,
; 6242          6358  4              DO_STRING :   REF VECTOR [, BYTE];
; 6243          6359  4
; 6244          6360  4
; 6245          6361  4          ! Point to the DO LIST entry.
; 6246          6362  4          !
; 6247          6363  4          DO_LIST_ENTRY = .EVENT [EVENT$L_DO];
; 6248          6364  4
; 6249          6365  4
; 6250          6366  4          ! Point to the command string.
; 6251          6367  4          !
; 6252          6368  4          DO_LENGTH = .(.DO_LIST_ENTRY[EVENT$L_DO_LIST_POINT])<0,16,0>;
; 6253          6369  4
```

```
; 6254          6370  4          DO_STRING = DBG$GET_MEMORY((.DO_LENGTH/%UPVAL)+1);
; 6255          6371  4          CH$MOVE(.DO_LENGTH,.DO_LIST_ENTRY[EVENT$L_DO_LIST_POINT]+2,.DO_STRING);
; 6256          6372  4          DO_STRING[.DO_LENGTH] = 0;
; 6257          6373  4
; 6258          6374  4
; 6259          6375  4          ! Add a link to the command input stream. First remember the
; 6260          6376  4          ! current pointer to the head of the CIS stack, and the number
; 6261          6377  4          ! of levels of nesting.
; 6262          6378  4          !
; 6263          6379  4          SAVED_CISHEAD = .DBG$GL_CISHEAD;
; 6264          6380  4          SAVED_LEVEL = .DBG$GL_CIS_LEVELS;
; 6265          6381  4          IF NOT DBG$NCIS_ADD (.DO_STRING, .DO_LENGTH, CIS_INPBUF,
; 6266          6382  4                                                  0, 0, MESSAGE_VECT)
; 6267          6383  4          THEN
; 6268          6384  4              CALLG (.MESSAGE_VECT, LIB$SIGNAL);
; 6269          6385  4
; 6270          6386  4
; 6271          6387  4          ! Process the DO clause. We repeatedly call COMMAND_PROC, each
; 6272          6388  4          ! call executing one command from the DO list. We exit the
; 6273          6389  4          ! loop if either: 1) the user said STEP or GO, thus resulting
; 6274          6390  4          ! in the TAKE_CMD flag becoming false, or 2) We exhaust the
; 6275          6391  4          ! commands in the current CIS, and get back to the SAVED_CISHEAD
; 6276          6392  4          ! level.
; 6277          6393  4          !
; 6278          6394  4          DBG$NINITIALIZE ();
; 6279          6395  4          WHILE (.DBG$GB_TAKE_CMD) AND
; 6280          6396  4                (.DBG$GL_CISHEAD NEQ .SAVED_CISHEAD) AND
; 6281          6397  4                (.DBG$GL_CIS_LEVELS GTR .SAVED_LEVEL) DO
; 6282          6398  4              DBG$COMMAND_PROC ();
; 6283          6399  4
; 6284          6400  4
; 6285          6401  4              ! If the user typed a GO, STEP, EXIT, or CONTINUE, return true,
; 6286          6402  4              ! otherwise false.
; 6287          6403  4              !
; 6288          6404  4              RETURN NOT .DBG$GB_TAKE_CMD;
; 6289          6405  3              END;
; 6290          6406  2          END;
; 6291          6407  2
; 6292          6408  2
; 6293          6409  2          ! Return FALSE since the /AFTER count hasn't run out.
; 6294          6410  2          !
; 6295          6411  2          RETURN FALSE;
; 6296          6412  1      END;


                                        0FFC 00000          .ENTRY  DBG$PROCESS_EVENT, Save R2,R3,R4,R5,R6,R7,- ; 6142
                                                                    R8,R9,R10,R11                                   ;
                5B 00000000G   00   9E 00002          MOVAB   DBG$GL_CIS_LEVELS, R11                              ;
                5A 00000000G   00   9E 00009          MOVAB   DBG$GL_CISHEAD, R10                                 ;
                59 00000000'   EF   9E 00010          MOVAB   EVENT$B_STOP_USER, R9                               ;
                58 00000000G   00   9E 00017          MOVAB   DBG$PUTMSG, R8                                      ;
                5E             04   C2 0001E          SUBL2   #4, SP                                              ;
                6D      012A   CF   DE 00021          MOVAL   17$, (FP)                                           ; 6170
                54        08   AC   D0 00026          MOVL    SIGNAL_ARG_PTR, R4                                  ; 6191
```

```
                        55      04    A4   D0 0002A          MOVL    4(R4), EXCEPTION_TYPE                   ;
                        50      04    AC   D0 0002E          MOVL    EVENT, R0                               ; 6197
                        04      14    A0   91 00032          CMPB    20(R0), #4                              ;
                                      16   12 00036          BNEQ    2$                                      ;
                    17  AC      80    8F   88 00038          BISB2   #128, 23(R0)                            ; 6200
                        50      04    AC   D0 0003D 1$:      MOVL    EVENT, R0                               ; 6201
                        04      14    A0   91 00041          CMPB    20(R0), #4                              ;
                                      07   12 00045          BNEQ    2$                                      ;
                    04  AC      08    A0   D0 00047          MOVL    8(R0), EVENT                            ; 6202
                                      EF   11 0004C          BRB     1$                                      ;
                        52      04    AC   D0 0004E 2$:      MOVL    EVENT, R2                               ; 6208
                        53      14    A2   9E 00052          MOVAB   20(R2), R3                              ;
                        03            63   91 00056          CMPB    (R3), #3                                ;
                                      29   12 00059          BNEQ    5$                                      ;
                                1C    A2   D7 0005B          DECL    28(R2)                                  ; 6216
                                      21   12 0005E          BNEQ    4$                                      ; 6217
                        02      01    A3   91 00060          CMPB    1(R3), #2                               ; 6228
                                      0C   12 00064          BNEQ    3$                                      ;
 00000000G              00            01   90 00066          MOVB    #1, DBG$GB_EXC_BRE_FLAG                 ; 6235
                                      54   DD 0006D          PUSHL   R4                                      ; 6240
                        68            01   FB 0006F          CALLS   #1, DBG$PUTMSG                          ;
                                      24   BB 00072 3$:      PUSHR   #^M<R2,R5>                              ; 6245
                0000V   CF            02   FB 00074          CALLS   #2, ANNOUNCE_EVENT                      ;
                    03  A3      80    8F   88 00079          BISB2   #128, 3(R3)                             ; 6250
                        69            01   90 0007E          MOVB    #1, EVENT$B_STOP_USER                   ; 6255
                                  00C8  31   00081 4$:       BRW     16$                                     ; 6261
                                1C    A2   D7 00084 5$:      DECL    28(R2)                                  ; 6270
                                      F8   12 00087          BNEQ    4$                                      ; 6271
                            1C  A2            01   D0 00089          MOVL    #1, 28(R2)                      ; 6279
                                20    A2   D5 0008D          TSTL    32(R2)                                  ; 6284
                                      0E   13 00090          BEQL    6$                                      ;
                                      52   DD 00092          PUSHL   R2                                      ; 6287
                        0000V   CF            01   FB 00094          CALLS   #1, PARSE_WHEN_CONDITION        ;
                                E1  00000000' EF   E9 00099          BLBC    WHEN_CONDITION, 4$              ; 6292
                    05          63            1A   E1 000A0 6$:      BBC     #26, (R3), 7$                   ; 6302
                            03  A3      80    8F   88 000A4          BISB2   #128, 3(R3)                     ; 6304
                                      63   95 000A9 7$:      TSTB    (R3)                                    ; 6309
                                      05   13 000AB          BEQL    8$                                      ;
                                      63   91 000AD          CMPB    (R3), #2                                ; 6310
                                      03   12 000B0          BNEQ    9$                                      ;
                                      69   01 90 000B2 8$:    MOVB    #1, EVENT$B_STOP_USER                   ; 6312
                    02                00    01   A3   8F 000B5 9$:      CASEB   1(R3), #0, #2                   ; 6317
                0008            0014          0014         000BA 10$:     .WORD   12$-10$,-                       ;
                                                                                12$-10$,-                       ;
                                                                                11$-10$                         ;
                                      0C   11 000C0          BRB     12$                                     ; 6324
                    00000000G   00            01   90 000C2 11$:     MOVB    #1, DBG$GB_EXC_BRE_FLAG         ; 6332
                                      54   DD 000C9          PUSHL   R4                                      ; 6337
                        68            01   FB 000CB          CALLS   #1, DBG$PUTMSG                          ;
                                      24   BB 000CE 12$:      PUSHR   #^M<R2,R5>                              ; 6342
                0000V   CF            02   FB 000D0          CALLS   #2, ANNOUNCE_EVENT                      ;
                                24    A2   D5 000D5          TSTL    36(R2)                                  ; 6349
                                      72   13 000D8          BEQL    16$                                     ;
                        50      24    A2   D0 000DA          MOVL    36(R2), DO_LIST_ENTRY                   ; 6363
                        52      0C    A0   D0 000DE          MOVL    12(DO_LIST_ENTRY), R2                   ; 6368
                        56            62   3C 000E2          MOVZWL  (R2), DO_LENGTH                         ;
                50      56            04   C7 000E5          DIVL3   #4, DO_LENGTH, R0                       ; 6370
```

```
                        01    A0  9F 000E9          PUSHAB  1(R0)                                   ;
    00000000G   00              01  FB 000EC          CALLS   #1, DBG$GET_MEMORY                      ;
                57              50  D0 000F3          MOVL    R0, DO_STRING                           ;
67        02    A2              56  28 000F6          MOVC3   DO_LENGTH, 2(R2), (DO_STRING)           ; 6371
                            6647  94 000FB          CLRB    (DO_LENGTH)[DO_STRING]                  ; 6372
                53              6A  D0 000FE          MOVL    DBG$GL_CISHEAD, SAVED_CISHEAD           ; 6379
                52              6B  D0 00101          MOVL    DBG$GL_CIS_LEVELS, SAVED_LEVEL          ; 6380
                                5E  DD 00104          PUSHL   SP                                      ; 6381
                                7E  7C 00106          CLRQ    -(SP)                                   ;
                                02  DD 00108          PUSHL   #2                                      ;
                                56  DD 0010A          PUSHL   DO_LENGTH                               ;
                                57  DD 0010C          PUSHL   DO_STRING                               ;
    00000000G   00              06  FB 0010E          CALLS   #6, DBG$NCIS_ADD                        ;
                08              50  E8 00115          BLBS    R0, 13$                                 ;
    00000000G   00        00    BE  FA 00118          CALLG   @MESSAGE_VECT, LIB$SIGNAL               ; 6384
    00000000G   00              00  FB 00120 13$:     CALLS   #0, DBG$INITIALIZE                      ; 6394
                13 00000000G    00  E9 00127 14$:     BLBC    DBG$GB_TAKE_CMD, 15$                    ; 6395
                53              6A  D1 0012E          CMPL    DBG$GL_CISHEAD, SAVED_CISHEAD           ; 6396
                                0E  13 00131          BEQL    15$                                     ;
                52              6B  D1 00133          CMPL    DBG$GL_CIS_LEVELS, SAVED_LEVEL          ; 6397
                                09  15 00136          BLEQ    15$                                     ;
    00000000G   00              00  FB 00138          CALLS   #0, DBG$COMMAND_PROC                    ; 6398
                                E6  11 0013F          BRB     14$                                     ;
                50 00000000G    00  9A 00141 15$:     MOVZBL  DBG$GB_TAKE_CMD, R0                     ; 6404
                50              50  D2 00148          MCOML   R0, R0                                  ;
                                    04 0014B          RET                                             ;
                                50  D4 0014C 16$:     CLRL    R0                                      ; 6412
                                    04 0014E          RET                                             ;
                                  0000 0014F 17$:     .WORD   Save nothing                            ; 6170
                                7E  D4 00151          CLRL    -(SP)                                   ;
                                5E  DD 00153          PUSHL   SP                                      ;
                      7E        04  AC  7D 00155          MOVQ    4(AP), -(SP)                        ;
    00000000G   00              03  FB 00159          CALLS   #3, DBG$FINAL_HANDL                     ;
                                    04 00160          RET                                             ;

; Routine Size:  353 bytes,    Routine Base:  DBG$CODE + 2438
```

```
;  6298          6413  1 GLOBAL ROUTINE DBG$UPDATE_WATCHPOINTS: NOVALUE =
;  6299          6414  1 !
;  6300          6415  1 ! FUNCTION
;  6301          6416  1 !       This routine updates the values in the watch point events.  This
;  6302          6417  1 !       is done in order to keep the watched values current even after a
;  6303          6418  1 !       DEPOSIT.
;  6304          6419  1 !
;  6305          6420  1 ! INPUTS
;  6306          6421  1 !       NONE
;  6307          6422  1 !
;  6308          6423  1 ! OUTPUTS
;  6309          6424  1 !       All watch point event entries are updated with their current value.
;  6310          6425  1 !
;  6311          6426  1
;  6312          6427  2     BEGIN
;  6313          6428  2
;  6314          6429  2     LOCAL
;  6315          6430  2         EVENT_ENTRY     : REF EVENT$EVENT_DESCRIPTOR,
;  6316          6431  2         LENGTH,
;  6317          6432  2         NEW_VALDESC     : REF DBG$VALDESC,
;  6318          6433  2         OLD_VALDESC     : REF DBG$VALDESC;
;  6319          6434  2
;  6320          6435  2
;  6321          6436  2     ! Starting at the head of the command queue, update each watch point
;  6322          6437  2     ! entry.
;  6323          6438  2     !
;  6324          6439  2     EVENT_ENTRY = .EVENT$CMD_QUEUE [L_QUEUE_FLINK];
;  6325          6440  2     WHILE .EVENT_ENTRY NEQA EVENT$CMD_QUEUE DO
;  6326          6441  3         BEGIN
;  6327          6442  3
;  6328          6443  3         ! If this is a watch point entry, update it.
;  6329          6444  3         !
;  6330          6445  3         IF .EVENT_ENTRY[EVENT$B_SUB_KIND] EQL EVENT$K_ACC_MDFY
;  6331          6446  3         THEN
;  6332          6447  4             BEGIN
;  6333          6448  4
;  6334          6449  4             ! Get the byte length of the entry's value.  Note that we actually
;  6335          6450  4             ! get it's bit length and round up.
;  6336          6451  4             !
;  6337          6452  4             LENGTH = DBG$DATA_LENGTH(EVENT_ENTRY[EVENT$A_VMSDESC]);
;  6338          6453  4             LENGTH = (.LENGTH + 7) ^ -3;
;  6339          6454  4
;  6340          6455  4             ! Make a new value descriptor from the VMS descriptor in this
;  6341          6456  4             ! event entry.  This will then contain the new current value
;  6342          6457  4             ! we are looking for.
;  6343          6458  4             !
;  6344          6459  4             NEW_VALDESC = DBG$MAKE_VAL_DESC(EVENT_ENTRY[EVENT$A_VMSDESC],
;  6345          6460  4                                             DBG$K_VALUE_DESC);
;  6346          6461  4
;  6347          6462  4             ! Now copy the "new" value into the old value descriptor that
;  6348          6463  4             ! hangs of this event entry.
;  6349          6464  4             !
;  6350          6465  4             OLD_VALDESC = .EVENT_ENTRY[EVENT$L_VALDESC];
;  6351          6466  4             CH$MOVE(.LENGTH,
;  6352          6467  4                     NEW_VALDESC [DBG$A_VALUE_ADDRESS],
;  6353          6468  4                     OLD_VALDESC [DBG$A_VALUE_ADDRESS]);
;  6354          6469  3             END;
```

```
;  6355          6470  3
;  6356          6471  3          ! Point to the next Command Queue entries.
;  6357          6472  3          !
;  6358          6473  3          EVENT_ENTRY = .EVENT_ENTRY [EVENT$L_CMD_FLINK];
;  6359          6474  2          END;
;  6360          6475  1      END;


                                        07FC 00000          .ENTRY  DBG$UPDATE_WATCHPOINTS, Save R2,R3,R4,R5,-      ; 6413
                                                                    R6,R7,R8,R9,R10
                                5A 00000000'    EF  9E 00002        MOVAB   EVENT$CMD_QUEUE, R10                    ;
                                56              6A  D0 00009        MOVL    EVENT$CMD_QUEUE, EVENT_ENTRY            ; 6439
                                50              6A  9E 0000C 1$:    MOVAB   EVENT$CMD_QUEUE, R0                     ; 6440
                                50              56  D1 0000F        CMPL    EVENT_ENTRY, R0                         ;
                                                3C  13 00012        BEQL    3$                                      ;
                                02      16      A6  91 00014        CMPB    22(EVENT_ENTRY), #2                     ; 6445
                                                31  12 00018        BNEQ    2$                                      ;
                                        34      A6  9F 0001A        PUSHAB  52(EVENT_ENTRY)                         ; 6452
                    00000000G   00              01  FB 0001D        CALLS   #1, DBG$DATA_LENGTH                     ;
                                59              50  D0 00024        MOVL    R0, LENGTH                              ;
                                50      07      A9  9E 00027        MOVAB   7(R9), R0                               ; 6453
                59              50      FD      8F  78 0002B        ASHL    #-3, R0, LENGTH                         ;
                                7E      7A      8F  9A 00030        MOVZBL  #122, -(SP)                             ; 6459
                                        34      A6  9F 00034        PUSHAB  52(EVENT_ENTRY)                         ;
                    00000000G   00              02  FB 00037        CALLS   #2, DBG$MAKE_VAL_DESC                   ;
                                58              50  D0 0003E        MOVL    R0, NEW_VALDESC                         ;
                                57      30      A6  D0 00041        MOVL    48(EVENT_ENTRY), OLD_VALDESC            ; 6465
            20  A7      20      A8              59  28 00045        MOVC3   LENGTH, 32(NEW_VALDESC), 32(OLD_VALDESC)    ; 6468
                                56              66  D0 0004B 2$:    MOVL    (EVENT_ENTRY), EVENT_ENTRY              ; 6473
                                                BC  11 0004E        BRB     1$                                      ; 6440
                                                    04 00050 3$:    RET                                             ; 6475

; Routine Size:  81 bytes,    Routine Base:  DBG$CODE + 2599
```

```
;  6362     6476  1 ROUTINE ANNOUNCE_EVENT(EVENT_ENTRY, EXCEPTION_TYPE): NOVALUE =
;  6363     6477  1 !
;  6364     6478  1 ! FUNCTION
;  6365     6479  1 !       This routine announces an event entry if the /SILENT flag is false.
;  6366     6480  1 !
;  6367     6481  1 ! INPUTS
;  6368     6482  1 !       EVENT_ENTRY :           Pointer to event entry.
;  6369     6483  1 !
;  6370     6484  1 ! OUTPUTS
;  6371     6485  1 !       Announces the event entry via DBG$PRINT.
;  6372     6486  1 !
;  6373     6487  1
;  6374     6488  2     BEGIN
;  6375     6489  2
;  6376     6490  2     MAP
;  6377     6491  2         EVENT_ENTRY :       REF EVENT$EVENT_DESCRIPTOR, ! Event Entry Pointer
;  6378     6492  2         EXCEPTION_TYPE :    BLOCK [%UPVAL, BYTE];
;  6379     6493  2
;  6380     6494  2
;  6381     6495  2     LOCAL
;  6382     6496  2         VMS_DESC: DBG$STG_DESC,
;  6383     6497  2         VAL_DESC: REF DBG$VALDESC,
;  6384     6498  2         STRING_DESCRIPTOR : BLOCK [8, BYTE],
;  6385     6499  2         OUTPUT_BUFFER : VECTOR [TTY_OUT_WIDTH, BYTE],
;  6386     6500  2         DUMMY,
;  6387     6501  2
;  6388     6502  2         ADDRESS;                                    ! Entry address
;  6389     6503  2
;  6390     6504  2
;  6391     6505  2     ! If the /SILENT flag is set, return without announcing.
;  6392     6506  2     ! (This can be set by SET BREA/SILENT or STEP/SILENT).
;  6393     6507  2     !
;  6394     6508  2     IF .EVENT_ENTRY[EVENT$V_SILENT] THEN RETURN;
;  6395     6509  2
;  6396     6510  2
;  6397     6511  2     ! Purge type ahead.
;  6398     6512  2     !
;  6399     6513  2     DBG$GL_OUTPRAB [RAB$V_CCO] = TRUE;
;  6400     6514  2
;  6401     6515  2
;  6402     6516  2     ! Setup a string descriptor.
;  6403     6517  2     !
;  6404     6518  2     STRING_DESCRIPTOR [DSC$B_DTYPE] = DSC$K_DTYPE_T;
;  6405     6519  2     STRING_DESCRIPTOR [DSC$B_CLASS] = DSC$K_CLASS_S;
;  6406     6520  2     STRING_DESCRIPTOR [DSC$A_POINTER] = 0;
;  6407     6521  2     STRING_DESCRIPTOR [DSC$W_LENGTH] = 0;
;  6408     6522  2
;  6409     6523  2
;  6410     6524  2     ! Print the event type (break, trace, watch or stepto - point).
;  6411     6525  2     !
;  6412     6526  2     DBG$PRINT   ($AC    ('!AC'),
;  6413     6527  2                  SELECTONE .EVENT_ENTRY [EVENT$B_CMD_TYPE] OF
;  6414     6528  2                      SET
;  6415     6529  2                      [EVENT$K_TYPE_BREAK]:
;  6416     6530  2                          $AC ('break');
;  6417     6531  2                      [EVENT$K_TYPE_TRACE]:
;  6418     6532  2                          $AC ('trace');
```

```
;  6419          6533  2                    [EVENT$K_TYPE_WATCH]:
;  6420          6534  2                        $AC ('watch');
;  6421          6535  2                    [EVENT$K_TYPE_STEPS]:
;  6422          6536  2                        $AC ('stepped');
;  6423          6537  2                    TES
;  6424          6538  2                );
;  6425          6539  2
;  6426          6540  2
;  6427          6541  2            ! Display the event kind (access, exception, instruction).
;  6428          6542  2            !
;  6429          6543  2            SELECTONE .EVENT_ENTRY [EVENT$B_CMD_KIND] OF
;  6430          6544  2                SET
;  6431          6545  2
;  6432          6546  2
;  6433          6547  2                ! This is an access (read, write, modify, execute) kind
;  6434          6548  2                ! of event point.  Display the address.
;  6435          6549  2                !
;  6436          6550  2                [EVENT$K_KIND_ACC]:
;  6437          6551  3                    BEGIN
;  6438          6552  3
;  6439          6553  3
;  6440          6554  3                    ! If this is not an /EXECUTE type (we're done with those), continue
;  6441          6555  3                    ! processing....
;  6442          6556  3                    !
;  6443          6557  3                    IF .EVENT_ENTRY [EVENT$B_SUB_KIND] NEQU EVENT$K_ACC_EXEC
;  6444          6558  3                    THEN
;  6445          6559  4                        BEGIN
;  6446          6560  4
;  6447          6561  4
;  6448          6562  4                    ! Print the access kind if read, write, modify, or return.
;  6449          6563  4                    ! If the address is an entry point, indicate that it is a
;  6450          6564  4                    ! routine.
;  6451          6565  4                    !
;  6452          6566  4                    DBG$PRINT   ($AC        (' !AC!AC'),
;  6453          6567  4                                 IF .EVENT_ENTRY [EVENT$B_CMD_TYPE] NEQU
;  6454          6568  4                                    EVENT$K_TYPE_WATCH
;  6455          6569  4                                 THEN
;  6456          6570  4                                    SELECTONE .EVENT_ENTRY [EVENT$B_SUB_KIND] OF
;  6457          6571  4                                    SET
;  6458          6572  4                                        [EVENT$K_ACC_READ]:
;  6459          6573  4                                            $AC ('on read of ');
;  6460          6574  4                                        [EVENT$K_ACC_WRIT]:
;  6461          6575  4                                            $AC ('on write of ');
;  6462          6576  4                                        [EVENT$K_ACC_MDFY]:
;  6463          6577  4                                            $AC ('on modify of ');
;  6464          6578  4                                        [EVENT$K_ACC_RTRN]:
;  6465          6579  4                                            $AC ('on return from ');
;  6466          6580  4                                    TES
;  6467          6581  4                                 ELSE
;  6468          6582  4                                    $AC ('of '),
;  6469          6583  4
;  6470          6584  4                                 IF .EVENT_ENTRY [EVENT$V_BREAK_ADDRESS]
;  6471          6585  4                                 THEN
;  6472          6586  4                                    $AC ('routine ')
;  6473          6587  4                                 ELSE
;  6474          6588  5                                    BEGIN
;  6475          6589  5                                    IF DBG$IS_IT_ENTRY
```

```
;  6476          6590  5                        (.EVENT_ENTRY [EVENT$L_ADDRESS] - 2)
;  6477          6591  5                    THEN
;  6478          6592  5                        $AC ('routine ')
;  6479          6593  5                    ELSE
;  6480          6594  5                        $AC ('')
;  6481          6595  5                    END
;  6482          6596  4                );
;  6483          6597  4
;  6484          6598  4
;  6485          6599  4            ! Print the address.
;  6486          6600  4            !
;  6487          6601  4            IF .EVENT_ENTRY [EVENT$B_CMD_TYPE] EQLU EVENT$K_TYPE_STEPS
;  6488          6602  4            THEN
;  6489          6603  5                BEGIN
;  6490          6604  5                LOCAL
;  6491          6605  5                    FROM_ADDR;
;  6492          6606  5
;  6493          6607  5
;  6494          6608  5                ! Display 'ROUTINE' if the saved 'from' address points
;  6495          6609  5                ! after an entry point.
;  6496          6610  5                !
;  6497          6611  5                FROM_ADDR = .EVENT_ENTRY [EVENT$L_USERS_PC];
;  6498          6612  5                IF DBG$IS_IT_ENTRY (.FROM_ADDR - 2)
;  6499          6613  5                THEN
;  6500          6614  6                    BEGIN
;  6501          6615  6                    DBG$PRINT ($AC ('routine '));
;  6502          6616  6                    FROM_ADDR = .FROM_ADDR - 2;
;  6503          6617  5                    END;
;  6504          6618  5
;  6505          6619  5
;  6506          6620  5                ! Print the address, but symbolize it first.
;  6507          6621  5                !
;  6508          6622  5                DBG$PRINT_IDENTIFIER_PC (.FROM_ADDR);
;  6509          6623  5                END
;  6510          6624  5
;  6511          6625  4                ELSE
;  6512          6626  4                    DBG$PRINT_IDENTIFIER (.EVENT_ENTRY [EVENT$L_PRIMARY]);
;  6513          6627  4
;  6514          6628  3                END;
;  6515          6629  3
;  6516          6630  3
;  6517          6631  3            ! Depending on the command type....
;  6518          6632  3            !
;  6519          6633  3            IF .EVENT_ENTRY [EVENT$B_CMD_TYPE] EQLU EVENT$K_TYPE_STEPS
;  6520          6634  3            THEN
;  6521          6635  3                DBG$PRINT ($AC (' to '))
;  6522          6636  3
;  6523          6637  3            ELSE
;  6524          6638  3                DBG$PRINT ($AC (' at '));
;  6525          6639  3
;  6526          6640  2            END;
;  6527          6641  2
;  6528          6642  2
;  6529          6643  2        ! This is an instruction type.
;  6530          6644  2        !
;  6531          6645  2        [EVENT$K_KIND_INS]:
;  6532          6646  3            BEGIN
```

```
; 6533     6647  3
; 6534     6648  3
; 6535     6649  3          ! Display the instruction type (calls, branches, all, or user
; 6536     6650  3          ! list.
; 6537     6651  3          !
; 6538     6652  3          IF .EVENT_ENTRY [EVENT$B_CMD_TYPE] NEQU EVENT$K_TYPE_STEPS
; 6539     6653  3          THEN
; 6540     6654  3              DBG$PRINT
; 6541     6655  3                      ($AC    (' on !AC'),
; 6542     6656  3                       SELECTONE .EVENT_ENTRY [EVENT$B_SUB_KIND] OF
; 6543     6657  3                          SET
; 6544     6658  3                          [EVENT$K_INS_CALL]:
; 6545     6659  3                              $AC ('calls');
; 6546     6660  3                          [EVENT$K_INS_BRAN]:
; 6547     6661  3                              $AC ('branches');
; 6548     6662  3                          [EVENT$K_INS_EVRY]:
; 6549     6663  3                              $AC ('instruction');
; 6550     6664  3                          [EVENT$K_INS_USER]:
; 6551     6665  3                              $AC ('instruction(s)');
; 6552     6666  3                          [EVENT$K_INS_LINE]:
; 6553     6667  3                              $AC ('lines');
; 6554     6668  3                          TES
; 6555     6669  3                      );
; 6556     6670  3
; 6557     6671  3          ! Depending on the command type....
; 6558     6672  3          !
; 6559     6673  3          IF .EVENT_ENTRY [EVENT$B_CMD_TYPE] EQLU EVENT$K_TYPE_STEPS
; 6560     6674  3          THEN
; 6561     6675  3              DBG$PRINT ($AC (' to '))
; 6562     6676  3          ELSE
; 6563     6677  3              DBG$PRINT ($AC (' at '));
; 6564     6678  3          END;
; 6565     6679  2
; 6566     6680  2
; 6567     6681  2          ! This is an exception type.
; 6568     6682  2          !
; 6569     6683  2          [EVENT$K_KIND_EXC]:
; 6570     6684  2              BEGIN
; 6571     6685  3              LOCAL
; 6572     6686  3                  DST_PTR : REF DST$RECORD,
; 6573     6687  3                  RST_PTR : REF RST$ENTRY,
; 6574     6688  3                  TRAP_OR_FAULT,
; 6575     6689  3                  LINE_NO,
; 6576     6690  3                  STMT_NO,
; 6577     6691  3                  STATUS;
; 6578     6692  3
; 6579     6693  3
; 6580     6694  3              ! Determine the nature (trap or fault) of the exception.
; 6581     6695  3              !
; 6582     6696  3              IF .EXCEPTION_TYPE [STS$V_FAC_NO] EQL 0
; 6583     6697  3              THEN
; 6584     6698  3                  BEGIN
; 6585     6699  4                  SELECTONE .EXCEPTION_TYPE OF
; 6586     6700  4                      SET
; 6587     6701  4
; 6588     6702  4                      [SS$_ASTFLT, SS$_BREAK, SS$_COMPAT,
; 6589     6703  4
```

```
;  6590          6704  4                SS$_OPCCUS, SS$_OPCDEC, SS$_RADRMOD, SS$_ROPRAND]:
;  6591          6705  4                    TRAP_OR_FAULT = FAULT_EXC;
;  6592          6706  4
;  6593          6707  4                [OTHERWISE]:
;  6594          6708  4                    TRAP_OR_FAULT = TRAP_EXC;
;  6595          6709  4
;  6596          6710  4                TES;
;  6597          6711  4
;  6598          6712  4            END
;  6599          6713  4
;  6600          6714  4
;  6601          6715  4        ! If the facility is not SS$, then we have a trap, meaning that the
;  6602          6716  4        ! PC points to the instruction after the LIB$SIGNAL or LIB$STOP call
;  6603          6717  4        ! that raised the exception.  (Non-SS$ exceptions can only be sig-
;  6604          6718  4        ! nalled, not raised by the hardware.)
;  6605          6719  4        !
;  6606          6720  3        ELSE
;  6607          6721  3            TRAP_OR_FAULT = TRAP_EXC;
;  6608          6722  3
;  6609          6723  3
;  6610          6724  3        ! The PC is the address to display.
;  6611          6725  3        !
;  6612          6726  3        ADDRESS = .DBG$RUNFRAME [DBG$L_USER_PC];
;  6613          6727  3
;  6614          6728  3
;  6615          6729  3        ! Display the appropriate message.
;  6616          6730  3        !
;  6617          6731  3        DBG$PRINT ($AC (' on exception '));
;  6618          6732  3        IF .TRAP_OR_FAULT EQL TRAP_EXC
;  6619          6733  3        THEN
;  6620          6734  3            DBG$PRINT ($AC ('preceding '))
;  6621          6735  3
;  6622          6736  3            ELSE
;  6623          6737  3                DBG$PRINT ($AC ('at '));
;  6624          6738  3
;  6625          6739  2                END;
;  6626          6740  2
;  6627          6741  2            TES;
;  6628          6742  2
;  6629          6743  2
;  6630          6744  2        ! If this is a /MODIFY event (we used ACCVIO's), the address of the
;  6631          6745  2        ! offending instruction is in ACCVIO_PC, otherwise it's just the
;  6632          6746  2        ! current PC.
;  6633          6747  2        !
;  6634          6748  2        IF (.EVENT_ENTRY [EVENT$B_CMD_KIND] EQLU EVENT$K_KIND_ACC) AND
;  6635          6749  3           (.EVENT_ENTRY [EVENT$B_SUB_KIND] EQLU EVENT$K_ACC_MDFY)
;  6636          6750  2        THEN
;  6637          6751  2            ADDRESS = .ACCVIO_PC
;  6638          6752  2
;  6639          6753  2        ELSE
;  6640          6754  2            ADDRESS = .DBG$RUNFRAME [DBG$L_USER_PC];
;  6641          6755  2
;  6642          6756  2
;  6643          6757  2        ! Symbolize and print address (and instruction)
;  6644          6758  2        !
;  6645          6759  2        PRINT_PC_AND_INSTRUCTION (.ADDRESS, .EVENT_ENTRY);
;  6646          6760  2        DBG$NEWLINE ();
```

```
;  6647          6761  2
;  6648          6762  2
;  6649          6763  2      ! If this is a modify-type, display the old and new values, and the
;  6650          6764  2      ! BREAK message.
;  6651          6765  2      !
;  6652          6766  2      IF .EVENT_ENTRY [EVENT$B_SUB_KIND] EQLU EVENT$K_ACC_MDFY
;  6653          6767  2      THEN
;  6654          6768  3          BEGIN
;  6655          6769  3
;  6656          6770  3
;  6657          6771  3          ! Print the source line where the actual variable-access occurred if
;  6658          6772  3          ! appropriate.
;  6659          6773  3          !
;  6660          6774  4          IF (.EVENT_ENTRY[EVENT$V_OVRD_SOURCE] AND
;  6661          6775  3                                  .EVENT_ENTRY[EVENT$V_STEP_SOURCE]) OR
;  6662          6776  4             ((NOT .EVENT_ENTRY[EVENT$V_OVRD_SOURCE]) AND
;  6663          6777  4                                  .DBG$GB_STP_PTR[EVENT$V_STEPPING_SOURCE])
;  6664          6778  3          THEN
;  6665          6779  3              PRINT_SOURCE(.ADDRESS);
;  6666          6780  3
;  6667          6781  3
;  6668          6782  3          ! Print the old value and the new value of the watched location.
;  6669          6783  3          !
;  6670          6784  3          DBG$PRINT($AC('   old value: '));
;  6671          6785  3          DBG$PRINT_VALUE(.OLDVALUE, .DBG$GB_RADIX[DBG$B_RADIX_OUTPUT_OVER],
;  6672          6786  3                                                  .DBG$GL_SIGN_FLAG, FALSE);
;  6673          6787  3          DBG$NEWLINE();
;  6674          6788  3          DBG$PRINT($AC('   new value: '));
;  6675          6789  3          DBG$PRINT_VALUE(.NEWVALUE, .DBG$GB_RADIX[DBG$B_RADIX_OUTPUT_OVER],
;  6676          6790  3                                                  .DBG$GL_SIGN_FLAG, FALSE);
;  6677          6791  3          DBG$NEWLINE();
;  6678          6792  3
;  6679          6793  3
;  6680          6794  3          ! Display the 'BREAK AT <address>' message.
;  6681          6795  3          !
;  6682          6796  3          DBG$PRINT (IF .EVENT_ENTRY [EVENT$B_CMD_TYPE] NEQU
;  6683          6797  3                        EVENT$K_TYPE_TRACE
;  6684          6798  3                     THEN
;  6685          6799  3                         $AC ('break at ')
;  6686          6800  3                     ELSE
;  6687          6801  3                         $AC ('trace at ')
;  6688          6802  3                    );
;  6689          6803  3
;  6690          6804  3          ! Symbolize and print address (and instruction)
;  6691          6805  3          !
;  6692          6806  3          PRINT_PC_AND_INSTRUCTION (.DBG$RUNFRAME [DBG$L_USER_PC], .EVENT_ENTRY);
;  6693          6807  3          DBG$NEWLINE ();
;  6694          6808  2          END;
;  6695          6809  2
;  6696          6810  2
;  6697          6811  2      ! Display the source line, if source stepping is indicated.
;  6698          6812  2      !
;  6699          6813  2      IF .TYPE_SOURCE AND
;  6700          6814  4         ((.EVENT_ENTRY[EVENT$V_OVRD_SOURCE] AND
;  6701          6815  3                                  .EVENT_ENTRY[EVENT$V_STEP_SOURCE]) OR
;  6702          6816  4          ((NOT .EVENT_ENTRY[EVENT$V_OVRD_SOURCE]) AND
;  6703          6817  3                                  .DBG$GB_STP_PTR[EVENT$V_STEPPING_SOURCE]))
```

```
;  6704          6818  2     THEN
;  6705          6819  3         BEGIN
;  6706          6820  3         PRINT_SOU       RUNFRAME [DBG$L_USER_PC]);
;  6707          6821  3         TYPE_SOURC       SE;
;  6708          6822  2         END;
;  6709          6823  2
;  6710          6824  2
;  6711          6825  2     ! We are all c       eturn.
;  6712          6826  2     !
;  6713          6827  2     RETURN;
;  6714          6828  2
;  6715          6829  1     END;


                                                        .PSECT  DBG$PLIT,NOWRT,  SHR,  PIC,0

                                                  43 41 21 03  00279 P.ACH:  .ASCII  <3>\!AC\
                                               6B 61 65 72 62 05  0027D P.ACI:  .ASCII  <5>\break\
                                               65 63 61 72 74 05  00283 P.ACJ:  .ASCII  <5>\trace\
                                               68 63 74 61 77 05  00289 P.ACK:  .ASCII  <5>\watch\
                                        64 65 70 70 65 74 73 07  0028F P.ACL:  .ASCII  <7>\stepped\
                                        43 41 21 43 41 21 20 07  00297 P.ACM:  .ASCII  <7>\ !AC!AC\
                     20 66 6F 20 64 61 65 72 20 6E 6F 0B  0029F P.ACN:  .ASCII  <11>\on read of \
                  20 66 6F 20 65 74 69 72 77 20 6E 6F 0C  002AB P.ACO:  .ASCII  <12>\on write of \
               20 66 6F 20 79 66 69 64 6F 6D 20 6E 6F 0D  002B8 P.ACP:  .ASCII  <13>\on modify of \
6D 6F 72 66 20 6E 72 75 74 65 72 20 6E 6F 0F  002C6 P.ACQ:  .ASCII  <15>\on return from \
                                                  20       002D5
                                                  20 66 6F 03  002D6 P.ACR:  .ASCII  <3>\of \
                                           20 65 6E 69 74 75 6F 72 08  002DA P.ACS:  .ASCII  <8>\routine \
                                           20 65 6E 69 74 75 6F 72 08  002E3 P.ACT:  .ASCII  <8>\routine \
                                                                 00  002EC P.ACU:  .ASCII  <0>
                                           20 65 6E 69 74 75 6F 72 08  002ED P.ACV:  .ASCII  <8>\routine \
                                                        20 6F 74 20 04  002F6 P.ACW:  .ASCII  <4>\ to \
                                                        20 74 61 20 04  002FB P.ACX:  .ASCII  <4>\ at \
                                                  43 41 21 20 6E 6F 20 07  00300 P.ACY:  .ASCII  <7>\ on !AC\
                                                        73 6C 6C 61 63 05  00308 P.ACZ:  .ASCII  <5>\calls\
                                           73 65 68 63 6E 61 72 62 08  0030E P.ADA:  .ASCII  <8>\branches\
                                     6E 6F 69 74 63 75 72 74 73 6E 69 0B  00317 P.ADB:  .ASCII  <11>\instruction\
29 73 28 6E 6F 69 74 63 75 72 74 73 6E 69 0E  00323 P.ADC:  .ASCII  <14>\instruction(s)\
                                                        73 65 6E 69 6C 05  00332 P.ADD:  .ASCII  <5>\lines\
                                                        20 6F 74 20 04  00338 P.ADE:  .ASCII  <4>\ to \
                                                        20 74 61 20 04  0033D P.ADF:  .ASCII  <4>\ at \
20 6E 6F 69 74 70 65 63 78 65 20 6E 6F 20 0E  00342 P.ADG:  .ASCII  <14>\ on exception \
                                        20 67 6E 69 64 65 63 65 72 70 0A  00351 P.ADH:  .ASCII  <10>\preceding \
                                                        20 74 61 20 03  0035C P.ADI:  .ASCII  <3>\at \
20 3A 65 75 6C 61 76 20 64 6C 6F 20 20 20 0E  00360 P.ADJ:  .ASCII  <14>\   old value: \
20 3A 65 75 6C 61 76 20 77 65 6E 20 20 20 0E  0036F P.ADK:  .ASCII  <14>\   new value: \
                                        20 74 61 20 68 61 65 72 62 09  0037E P.ADL:  .ASCII  <9>\break at \
                                        20 74 61 20 65 63 61 72 74 09  00388 P.ADM:  .ASCII  <9>\trace at \


                                                        .PSECT  DBG$CODE,NOWRT,  SHR,  PIC,0

                                                  0FFC 00000 ANNOUNCE_EVENT:
                                                             .WORD   Save R2,R3,R4,R5,R6,R7,R8,R9,R10,R11          ; 6476
```

```
                5B 00000000G   00   9E 00002          MOVAB   DBG$IS_IT_ENTRY, R11                          ;
                5A 00000000G   00   9E 00009          MOVAB   DBG$NEQLINE, R10                             ;
                59 00000000G   00   9E 00010          MOVAB   DBG$RUNFRAME+64, R9                          ;
                58 00000000'   EF   9E 00017          MOVAB   TYPE_SOURCE, R8                              ;
                57 00000000G   00   9E 0001E          MOVAB   DBG$PRINT, R7                                ;
                56 00000000'   EF   9E 00025          MOVAB   P.ACI, R6                                    ;
                5E       FF68  CE   9E 0002C          MOVAB   -152(SP), SP                                 ;
                52         04  A0   D0 00031          MOVL    EVENT_ENTRY, R2                              ; 6508
                54         14  A2   9E 00035          MOVAB   20(R2), R4                                   ;
                01         03  A4   E9 00039          BLBC    3(R4), 1$                                    ;
                                     04 0003D          RET                                                  ;
00000000G       00         80  8F   88 0003E 1$:      BISB2   #128, DBG$GL_OUTPRAB+7                       ; 6513
        EC      AD 010E0000  8F   D0 00046          MOVL    #17694720, STRING_DESCRIPTOR                 ; 6521
                   F0        AD   D4 0004E          CLRL    STRING_DESCRIPTOR+4                          ; 6520
                             64   95 00051          TSTB    (R4)                                         ; 6529
                             05   12 00053          BNEQ    2$                                           ;
                50                66   9E 00055          MOVAB   P.ACI, R0                                    ; 6530
                                  24   11 00058          BRB     6$                                           ;
                01                64   91 0005A 2$:      CMPB    (R4), #1                                     ; 6531
                                  06   12 0005D          BNEQ    3$                                           ;
                50         06     A6   9E 0005F          MOVAB   P.ACJ, R0                                    ; 6532
                                  19   11 00063          BRB     6$                                           ;
                02                64   91 00065 3$:      CMPB    (R4), #2                                     ; 6533
                                  06   12 00068          BNEQ    4$                                           ;
                50         0C     A6   9E 0006A          MOVAB   P.ACK, R0                                    ; 6534
                                  0E   11 0006E          BRB     6$                                           ;
                03                64   91 00070 4$:      CMPB    (R4), #3                                     ; 6535
                                  05   13 00073          BEQL    5$                                           ;
                7E                01   CE 00075          MNEGL   #1, -(SP)                                    ;
                                  06   11 00078          BRB     7$                                           ;
                50         12     A6   9E 0007A 5$:      MOVAB   P.ACL, R0                                    ; 6536
                                  50   DD 0007E 6$:      PUSHL   R0                                           ;
                   FC             A6   9F 00080 7$:      PUSHAB  P.ACH                                        ; 6526
                67                02   FB 00083          CALLS   #2, DBG$PRINT                                ;
                01                A4   95 00086          TSTB    1(R4)                                        ; 6550
                                  03   13 00089          BEQL    8$                                           ;
                                00AF   31 0008B          BRW     23$                                          ;
                03         02     A4   91 0008E 8$:      CMPB    2(R4), #3                                    ; 6557
                                  03   12 00092          BNEQ    9$                                           ;
                                0097   31 00094          BRW     21$                                          ;
        06         19             A2   05   E1 00097 9$:      BBC     #5, 25(R2), 10$                      ; 6584
                50         5D     A6   9E 0009C          MOVAB   P.ACS, R0                                    ; 6586
                                  15   11 000A0          BRB     12$                                          ;
        7E         2C             A2   02   C3 000A2 10$:     SUBL3   #2, 44(R2), -(SP)                    ; 6590
                6B                01   FB 000A7          CALLS   #1, DBG$IS_IT_ENTRY                          ;
                06                50   E9 000AA          BLBC    R0, 11$                                      ;
                50         66     A6   9E 000AD          MOVAB   P.ACT, R0                                    ; 6592
                                  04   11 000B1          BRB     12$                                          ;
                50         6F     A6   9E 000B3 11$:     MOVAB   P.ACU, R0                                    ; 6594
                                  50   DD 000B7 12$:     PUSHL   R0                                           ; 6588
                02                64   91 000B9          CMPB    (R4), #2                                     ; 6567
                                  34   13 000BC          BEQL    17$                                          ;
                02         02     A4   95 000BE          TSTB    2(R4)                                        ; 6572
                                  06   12 000C1          BNEQ    13$                                          ;
                50         22     A6   9E 000C3          MOVAB   P.ACN, R0                                    ; 6573
                                  2D   11 000C7          BRB     18$                                          ;
                01         02     A4   91 000C9 13$:     CMPB    2(R4), #1                                    ; 6574
```

```
                                06 12 000CD          BNEQ    14$                                     ;
                          50    A6 9E 000CF          MOVAB   P.ACO, R0                               ; 6575
                                21 11 000D3          BRB     18$                                     ;
                          02 02 A4 91 000D5 14$:     CMPB    2(R4), #2                               ; 6576
                                06 12 000D9          BNEQ    15$                                     ;
                          50    3B A6 9E 000DB       MOVAB   P.ACP, R0                               ; 6577
                                15 11 000DF          BRB     18$                                     ;
                          04 02 A4 91 000E1 15$:     CMPB    2(R4), #4                               ; 6578
                                05 13 000E5          BEQL    16$                                     ;
                          50    01 CE 000E7          MNEGL   #1, R0                                  ;
                                0A 11 000EA          BRB     18$                                     ;
                          50    49 A6 9E 000EC 16$:  MOVAB   P.ACQ, R0                               ; 6579
                                04 11 000F0          BRB     18$                                     ; 6570
                          50    59 A6 9E 000F2 17$:  MOVAB   P.ACR, R0                               ; 6582
                                50 DD 000F6 18$:     PUSHL   R0                                      ;
                                1A A6 9F 000F8       PUSHAB  P.ACM                                   ; 6566
                          67    03 FB 000FB          CALLS   #3, DBG$PRINT                           ;
                          03    64 91 000FE          CMPB    (R4), #3                                ; 6601
                                21 12 00101          BNEQ    20$                                     ;
                          53    20 A2 D0 00103       MOVL    32(R2), FROM_ADDR                       ; 6611
                                FE A3 9F 00107       PUSHAB  -2(FROM_ADDR)                           ; 6612
                          6B    01 FB 0010A          CALLS   #1, DBG$IS_IT_ENTRY                     ;
                          09    50 E9 0010D          BLBC    R0, 19$                                 ;
                                70 A6 9F 00110       PUSHAB  P.ACV                                   ; 6615
                          67    01 FB 00113          CALLS   #1, DBG$PRINT                           ;
                          53    02 C2 00116          SUBL2   #2, FROM_ADDR                           ; 6616
                                53 DD 00119 19$:     PUSHL   FROM_ADDR                               ; 6622
00000000G                 00    01 FB 0011B          CALLS   #1, DBG$PRINT_IDENTIFIER_PC             ;
                                0A 11 00122          BRB     21$                                     ; 6601
                                28 A2 DD 00124 20$:  PUSHL   40(R2)                                  ; 6626
00000000G                 00    01 FB 00127          CALLS   #1, DBG$PRINT_IDENTIFIER                ;
                          03    64 91 0012E 21$:     CMPB    (R4), #3                                ; 6633
                                05 12 00131          BNEQ    22$                                     ;
                                79 A6 9F 00133       PUSHAB  P.ACW                                   ; 6635
                                6C 11 00136          BRB     33$                                     ;
                                7E A6 9F 00138 22$:  PUSHAB  P.ACX                                   ; 6638
                                67 11 0013B          BRB     33$                                     ;
                          01    01 A4 91 0013D 23$:  CMPB    1(R4), #1                               ; 6645
                                63 12 00141          BNEQ    34$                                     ;
                          03    64 91 00143          CMPB    (R4), #3                                ; 6652
                                4D 13 00146          BEQL    31$                                     ;
                          05    02 A4 91 00148       CMPB    2(R4), #5                               ; 6658
                                07 12 0014C          BNEQ    24$                                     ;
                          50    008B C6 9E 0014E     MOVAB   P.ACZ, R0                               ; 6659
                                37 11 00153          BRB     29$                                     ;
                          06    02 A4 91 00155 24$:  CMPB    2(R4), #6                               ; 6660
                                07 12 00159          BNEQ    25$                                     ;
                          50    0091 C6 9E 0015B     MOVAB   P.ADA, R0                               ; 6661
                                2A 11 00160          BRB     29$                                     ;
                          08    02 A4 91 00162 25$:  CMPB    2(R4), #8                               ; 6662
                                07 12 00166          BNEQ    26$                                     ;
                          50    009A C6 9E 00168     MOVAB   P.ADB, R0                               ; 6663
                                1D 11 0016D          BRB     29$                                     ;
                          09    02 A4 91 0016F 26$:  CMPB    2(R4), #9                               ; 6664
                                07 12 00173          BNEQ    27$                                     ;
                          50    00A6 C6 9E 00175     MOVAB   P.ADC, R0                               ; 6665
                                10 11 0017A          BRB     29$                                     ;
```

```
                07      02      A4  91 0017C 27$:    CMPB    2(R4), #7                       ; 6666
                                05  13 00180         BEQL    28$
                7E              01  CE 00182         MNEGL   #1, -(SP)
                                07  11 00185         BRB     30$
                50      00B5    C6  9E 00187 28$:    MOVAB   P.ADD, R0                       ; 6667
                                50  DD 0018C 29$:    PUSHL   R0
                        0083    C6  9F 0018E 30$:    PUSHAB  P.ACY                           ; 6655
                67              02  FB 00192         CALLS   #2, DBG$PRINT
                03              64  91 00195 31$:    CMPB    (R4), #3                        ; 6674
                                06  12 00198         BNEQ    32$
                        00BB    C6  9F 0019A         PUSHAB  P.ADE                           ; 6676
                                78  11 0019E         BRB     39$
                        00C0    C6  9F 001A0 32$:    PUSHAB  P.ADF                           ; 6678
                                72  11 001A4 33$:    BRB     39$
                02      01      A4  91 001A6 34$:    CMPB    1(R4), #2                       ; 6684
                                6F  12 001AA         BNEQ    40$
              0FFF      8F      0A  AC B3 001AC      BITW    EXCEPTION_TYPE+2, #4095         ; 6697
                                48  12 001B2         BNEQ    36$
                50      08      AC  D0 001B4         MOVL    EXCEPTION_TYPE, R0              ; 6700
          0000040C      8F          50  D1 001B8     CMPL    R0, #1036                       ; 6703
                                    36  13 001BF     BEQL    35$
          00000414      8F          50  D1 001C1     CMPL    R0, #1044
                                    2D  13 001C8     BEQL    35$
          0000042C      8F          50  D1 001CA     CMPL    R0, #1068
                                    24  13 001D1     BEQL    35$
          00000434      8F          50  D1 001D3     CMPL    R0, #1076
                                    1B  13 001DA     BEQL    35$
          0000043C      8F          50  D1 001DC     CMPL    R0, #1084
                                    12  13 001E3     BEQL    35$
          0000044C      8F          50  D1 001E5     CMPL    R0, #1100
                                    09  13 001EC     BEQL    35$
          00000454      8F          50  D1 001EE     CMPL    R0, #1108
                                    05  12 001F5     BNEQ    36$
                53                  02  D0 001F7 35$:    MOVL    #2, TRAP_OR_FAULT           ; 6705
                                    03  11 001FA     BRB     37$
                53                  01  D0 001FC 36$:    MOVL    #1, TRAP_OR_FAULT           ; 6721
                55                  69  D0 001FF 37$:    MOVL    DBG$RUNFRAME+64, ADDRESS    ; 6726
                        00C5        C6  9F 00202         PUSHAB  P.ADG                       ; 6731
                67                  01  FB 00206         CALLS   #1, DBG$PRINT
                01                  53  D1 00209         CMPL    TRAP_OR_FAULT, #1           ; 6732
                                    06  12 0020C         BNEQ    38$
                        00D4        C6  9F 0020E         PUSHAB  P.ADH                       ; 6734
                                    04  11 00212         BRB     39$
                        00DF        C6  9F 00214 38$:    PUSHAB  P.ADI                       ; 6737
                67                  01  FB 00218 39$:    CALLS   #1, DBG$PRINT
                        01          A4  95 0021B 40$:    TSTB    1(R4)                       ; 6748
                                    0C  12 0021E         BNEQ    41$
                02      02          A4  91 00220         CMPB    2(R4), #2                   ; 6749
                                    06  12 00224         BNEQ    41$
                55      04          A8  D0 00226         MOVL    ACCVIO_PC, ADDRESS          ; 6751
                                    03  11 0022A         BRB     42$
                55                  69  D0 0022C 41$:    MOVL    DBG$RUNFRAME+64, ADDRESS    ; 6754
                                    52  DD 0022F 42$:    PUSHL   R2                          ; 6759
                                    55  DD 00231         PUSHL   ADDRESS
              0000V     CF              02  FB 00233     CALLS   #2, PRINT_PC_AND_INSTRUCTION
                6A                  00  FB 00238         CALLS   #0, DBG$NEWLINE             ; 6760
                02      02          A4  91 0023B         CMPB    2(R4), #2                   ; 6766
```

```
                                        03  13 0023F          BEQL    43$                                     ;
                                      0089  31 00241          BRW     49$                                     ;
0A        18   A2                       04  E1 00244 43$:     BBC     #4, 24(R2), 44$                         ; 6774
10        18   A2                       05  E0 00249          BBS     #5, 24(R2), 45$                         ; 6775
12        18   A2                       04  E0 0024E          BBS     #4, 24(R2), 46$                         ; 6776
              50 00000000G              00  D0 00253 44$:     MOVL    DBG$GB_STP_PTR, R0                      ; 6777
07                                      0A  E1 0025A          BBC     #10, (R0), 46$                          ;
                                        55  DD 0025E 45$:     PUSHL   ADDRESS                                 ; 6779
          0000V CF                      01  FB 00260          CALLS   #1, PRINT_SOURCE                        ;
                    00E3                C6  9F 00265 46$:     PUSHAB  P.ADJ                                   ; 6784
                 67                     01  FB 00269          CALLS   #1, DBG$PRINT                           ;
                                        7E  D4 0026C          CLRL    -(SP)                                   ; 6785
                    00000000G           00  DD 0026E          PUSHL   DBG$GL_SIGN_FLAG                        ; 6786
                 7E 00000000G           00  9A 00274          MOVZBL  DBG$GB_RADIX+2, -(SP)                   ; 6785
                       FC               A8  DD 0027B          PUSHL   OLDVALUE                                ;
    00000000G    00                     04  FB 0027E          CALLS   #4, DBG$PRINT_VALUE                     ;
                 6A                     00  FB 00285          CALLS   #0, DBG$NEWLINE                         ; 6787
                    00F2                C6  9F 00288          PUSHAB  P.ADK                                   ; 6788
                 67                     01  FB 0028C          CALLS   #1, DBG$PRINT                           ;
                                        7E  D4 0028F          CLRL    -(SP)                                   ; 6789
                    00000000G           00  DD 00291          PUSHL   DBG$GL_SIGN_FLAG                        ; 6790
                 7E 00000000G           00  9A 00297          MOVZBL  DBG$GB_RADIX+2, -(SP)                   ; 6789
                       F8               A8  DD 0029E          PUSHL   NEWVALUE                                ;
    00000000G    00                     04  FB 002A1          CALLS   #4, DBG$PRINT_VALUE                     ;
                 6A                     00  FB 002A8          CALLS   #0, DBG$NEWLINE                         ; 6791
                 01                     64  91 002AB          CMPB    (R4), #1                                ; 6796
                                        07  13 002AE          BEQL    47$                                     ;
                 50       0101          C6  9E 002B0          MOVAB   P.ADL, R0                               ; 6799
                                        05  11 002B5          BRB     48$                                     ;
                 50       010B          C6  9E 002B7 47$:     MOVAB   P.ADM, R0                               ; 6801
                                        50  DD 002BC 48$:     PUSHL   R0                                      ;
                 67                     01  FB 002BE          CALLS   #1, DBG$PRINT                           ; 6796
                                        52  DD 002C1          PUSHL   R2                                      ; 6806
                                        69  DD 002C3          PUSHL   DBG$RUNFRAME+64                         ;
          0000V CF                      02  FB 002C5          CALLS   #2, PRINT_PC_AND_INSTRUCTION            ;
                 6A                     00  FB 002CA          CALLS   #0, DBG$NEWLINE                         ; 6807
                 23                     68  E9 002CD 49$:     BLBC    TYPE_SOURCE, 52$                        ; 6813
0A        18   A2                       04  E1 002D0          BBC     #4, 24(R2), 50$                         ; 6814
10        18   A2                       05  E0 002D5          BBS     #5, 24(R2), 51$                         ; 6815
14        18   A2                       04  E0 002DA          BBS     #4, 24(R2), 52$                         ; 6816
              50 00000000G              00  D0 002DF 50$:     MOVL    DBG$GB_STP_PTR, R0                      ; 6817
09                                      0A  E1 002E6          BBC     #10, (R0), 52$                          ;
                                        69  DD 002EA 51$:     PUSHL   DBG$RUNFRAME+64                         ; 6820
          0000V CF                      01  FB 002EC          CALLS   #1, PRINT_SOURCE                        ;
                                        68  D4 002F1          CLRL    TYPE_SOURCE                             ; 6821
                                            04 002F3 52$:     RET                                             ; 6829

; Routine Size:  756 bytes,    Routine Base:  DBG$CODE + 25EA
```

```
;  6717          6830  1 ROUTINE INSQUE1(ENTRY_ADDRESS, QUEUE_ADDRESS): NOVALUE =
;  6718          6831  1 !
;  6719          6832  1 ! FUNCTION
;  6720          6833  1 !       This routine adds an entry into a queue.  This routine is used when
;  6721          6834  1 !       the forward and backward links are not the 0th and 1st longwords in
;  6722          6835  1 !       the queue head and queue entry, but the 2nd and 3rd.
;  6723          6836  1 !
;  6724          6837  1 ! INPUTS
;  6725          6838  1 !       QUEUE_ADDRESS :         Pointer to queue head.
;  6726          6839  1 !       ENTRY_ADDRESS :         Pointer to entry.
;  6727          6840  1 !
;  6728          6841  1 ! OUTPUTS
;  6729          6842  1 !       None
;  6730          6843  1 !
;  6731          6844  2     BEGIN
;  6732          6845  2
;  6733          6846  2     MAP
;  6734          6847  2         ENTRY_ADDRESS : REF QUEUE_HEAD,
;  6735          6848  2         QUEUE_ADDRESS : REF QUEUE_HEAD;
;  6736          6849  2
;  6737          6850  2     LOCAL
;  6738          6851  2         NEXTS_ADDRESS : REF QUEUE_HEAD;     ! Next entry's pointer.
;  6739          6852  2
;  6740          6853  2
;  6741          6854  2     ! Point to the current 1st (next) entry.
;  6742          6855  2     !
;  6743          6856  2     NEXTS_ADDRESS = .QUEUE_ADDRESS [L_QUEUE_FLINK1];
;  6744          6857  2
;  6745          6858  2
;  6746          6859  2     ! Link the queue entry into the queue at the head.
;  6747          6860  2     !
;  6748          6861  2     ENTRY_ADDRESS [L_QUEUE_FLINK1] = .QUEUE_ADDRESS [L_QUEUE_FLINK1];
;  6749          6862  2     ENTRY_ADDRESS [L_QUEUE_BLINK1] = .QUEUE_ADDRESS;
;  6750          6863  2
;  6751          6864  2
;  6752          6865  2     ! Link the queue to the queue entry.
;  6753          6866  2     !
;  6754          6867  2     QUEUE_ADDRESS [L_QUEUE_FLINK1] = .ENTRY_ADDRESS;
;  6755          6868  2     NEXTS_ADDRESS [L_QUEUE_BLINK1] = .ENTRY_ADDRESS;
;  6756          6869  1     END;


                                        0004 00000 INSQUE1:.WORD   Save R2                                  ;  6830
                    50      08    AC    D0 00002           MOVL    QUEUE_ADDRESS, R0                      ;  6856
                    52      08    A0    D0 00006           MOVL    8(R0), NEXTS_ADDRESS                   ;
                    51      04    AC    D0 0000A           MOVL    ENTRY_ADDRESS, R1                      ;  6861
              08    A1      08    A0    D0 0000E           MOVL    8(R0), 8(R1)                           ;
              0C    A1            50    D0 00013           MOVL    R0, 12(R1)                             ;  6862
              08    A0            51    D0 00017           MOVL    R1, 8(R0)                              ;  6867
              0C    A2            51    D0 0001B           MOVL    R1, 12(NEXTS_ADDRESS)                  ;  6868
                                        04 0001F           RET                                            ;  6869

; Routine Size:  32 bytes,    Routine Base:  DBG$CODE + 28DE
```

```
;  6758          6870  1 ROUTINE REMQUE1(ENTRY_ADDRESS). NOVALUE =
;  6759          6871  1 !
;  6760          6872  1 ! FUNCTION
;  6761          6873  1 !       This routine deletes an entry from a queue.  This routine is used when
;  6762          6874  1 !       the forward and backward links are not the 0th and 1st longwords in
;  6763          6875  1 !       the queue head and queue entry, but the 2nd and 3rd.
;  6764          6876  1 !
;  6765          6877  1 ! INPUTS
;  6766          6878  1 !       ENTRY_ADDRESS :         Pointer to entry.
;  6767          6879  1 !
;  6768          6880  1 ! OUTPUTS
;  6769          6881  1 !       None
;  6770          6882  1 !
;  6771          6883  2     BEGIN
;  6772                2
;  6773          6885  2     MAP
;  6774          6886  2         ENTRY_ADDRESS : REF QUEUE_HEAD;
;  6775          6887  2
;  6776          6888  2     LOCAL
;  6777          6889  2         NEXTS_ADDRESS : REF QUEUE_HEAD,
;  6778          6890  2         QUEUE_ADDRESS : REF QUEUE_HEAD;
;  6779          6891  2
;  6780          6892  2
;  6781          6893  2     ! Point to the queue head and next entry.
;  6782          6894  2     !
;  6783          6895  2     QUEUE_ADDRESS = .ENTRY_ADDRESS [L_QUEUE_BLINK1];
;  6784          6896  2     NEXTS_ADDRESS = .ENTRY_ADDRESS [L_QUEUE_FLINK1];
;  6785          6897  2
;  6786          6898  2
;  6787          6899  2     ! Unlink the entry from the queue.
;  6788          6900  2     !
;  6789          6901  2     QUEUE_ADDRESS [L_QUEUE_FLINK1] = .NEXTS_ADDRESS;
;  6790          6902  2     NEXTS_ADDRESS [L_QUEUE_BLINK1] = .QUEUE_ADDRESS;
;  6791          6903  1     END;


                                        0000 00000 REMQUE1:.WORD   Save nothing                                  ; 6870
                          50      04    AC   D0 00002          MOVL   ENTRY_ADDRESS, R0                         ; 6895
                          50      08    A0   7D 00006          MOVQ   8(R0), NEXTS_ADDRESS                      ; 6896
                    08    A1            50   D0 0000A          MOVL   NEXTS_ADDRESS, 8(QUEUE_ADDRESS)           ; 6901
                    0C    A0            51   D0 0000E          MOVL   QUEUE_ADDRESS, 12(NEXTS_ADDRESS)          ; 6902
                                             04 00012          RET                                              ; 6903

; Routine Size:  19 bytes,    Routine Base:  DBG$CODE + 28FE
```

```
;  6793          6904  1 ROUTINE PRINT_SOURCE(ADDRESS): NOVALUE =
;  6794          6905  2     BEGIN
;  6795          6906  2     BUILTIN
;  6796          6907  2         FP;
;  6797          6908  2
;  6798          6909  2     .FP = DBG$FINAL_HANDL;
;  6799          6910  2     DBG$SRC_TYPE_PC_SOURCE (.ADDRESS, .ADDRESS, 0, TRUE);
;  6800          6911  1     END;


                                        0000 00000 PRINT_SOURCE:
                                                           .WORD   Save nothing                                  ; 6904
                            6D 00000000G   00    9E 00002      MOVAB   DBG$FINAL_HANDL, (FP)                     ; 6909
                                           01    DD 00009      PUSHL   #1                                        ; 6910
                                           7E    D4 0000B      CLRL    -(SP)                                     ;
                                     04    AC    DD 0000D      PUSHL   ADDRESS                                   ;
                                     04    AC    DD 00010      PUSHL   ADDRESS                                   ;
                            00000000G      00    FB 00013      CALLS   #4, DBG$SRC_TYPE_PC_SOURCE                ;
                                                   04 0001A      RET                                               ; 6911

; Routine Size:  27 bytes,    Routine Base:  DBG$CODE + 2911
```

```
;  6802          6912  1 ROUTINE PRINT_PC_AND_INSTRUCTION(ADDRESS, EVENT): NOVALUE =
;  6803          6913  2     BEGIN
;  6804          6914  2     MAP
;  6805          6915  2         ADDRESS :       REF VECTOR [, BYTE],
;  6806          6916  2         EVENT   :       REF EVENT$EVENT_DESCRIPTOR;
;  6807          6917  2
;  6808          6918  2     LOCAL ADDRESS_2;
;  6809          6919  2     BUILTIN
;  6810          6920  2         FP;
;  6811          6921  2
;  6812          6922  2
;  6813          6923  2     ! Establish a handler for errors. This is in case the instruction
;  6814          6924  2     ! we have stepped to is invalid, and the INS_DECODE routine signals
;  6815          6925  2     ! an error.
;  6816          6926  2     !
;  6817          6927  2     .FP = PRINT_PC_INST_HANDLER;
;  6818          6928  2
;  6819          6929  2
;  6820          6930  2     ! Display 'ROUTINE' if the current address points after an entry point.
;  6821          6931  2     !
;  6822          6932  2     IF .EVENT [EVENT$V_BREAK_ADDRESS]
;  6823          6933  2     THEN
;  6824          6934  2         DBG$PRINT ($AC ('routine '))
;  6825          6935  2
;  6826          6936  2     ELSE
;  6827          6937  3         BEGIN
;  6828          6938  3         IF DBG$IS_IT_ENTRY ((ADDRESS_2 = .ADDRESS - 2))
;  6829          6939  3         THEN
;  6830          6940  3             DBG$PRINT ($AC ('routine '))
;  6831          6941  3         ELSE
;  6832          6942  3             ADDRESS_2 = .ADDRESS;
;  6833          6943  2         END;
;  6834          6944  2
;  6835          6945  2
;  6836          6946  2     ! Print the address, but symbolize it first.
;  6837          6947  2     !
;  6838          6948  2     IF .EVENT [EVENT$V_BREAK_ADDRESS]
;  6839          6949  2     THEN
;  6840          6950  2         DBG$PRINT_IDENTIFIER (.EVENT [EVENT$L_PRIMARY])
;  6841          6951  2     ELSE
;  6842          6952  2         DBG$PRINT_IDENTIFIER_PC (.ADDRESS_2);
;  6843          6953  2
;  6844          6954  2
;  6845          6955  2     ! Display the instruction we're at, if we're not line stepping.
;  6846          6956  2     !
;  6847          6957  2     IF .DBG$GB_STP_PTR [EVENT$V_STEPPING_LINE] THEN RETURN;
;  6848          6958  2
;  6849          6959  2     DBG$PRINT($AC (': '));
;  6850          6960  2     DBG$INS_DECODE (.ADDRESS, TRUE, FALSE);
;  6851          6961  1     END;


                                                        .PSECT  DBG$PLIT,NOWRT,  SHR,  PIC,0

                    20  65  6E  69  74  75  6F  72  08  00392 P.ADN:  .ASCII  <8>\routine \                    ;
                    20  65  6E  69  74  75  6F  72  08  0039B P.ADO:  .ASCII  <8>\routine \                    ;
```

```
                20  3A  02  003A4 P.ADP:   .ASCII  <2>\: \                                 ;

                                            .PSECT  DBG$CODE,NOWRT,  SHR,  PIC,0

                                    003C 00000 PRINT_PC_AND_INSTRUCTION:
                                            .WORD   Save R2,R3,R4,R5                        ; 6912
                    55 00000000G    00   9E 00002        MOVAB   DBG$PRINT, R5               ;
                    54 00000000'    EF   9E 00009        MOVAB   P.ADN, R4                   ;
                    6D      0000V   CF   9E 00010        MOVAB   PRINT_PC_INS _HANDLER, (FP) ; 6927
                    52        08    AC   D0 00015        MOVL    EVENT, R2                   ; 6932
04          19      A2              05   E1 00019        BBC     #5, 25(R2), 1$              ;
                                    54   DD 0001E        PUSHL   R4                          ; 6934
                                    14   11 00020        BRB     2$                          ;
53          04      AC              02   C3 00022 1$:    SUBL3   #2, ADDRESS, ADDRESS_2      ; 6938
                                    53   DD 00027        PUSHL   ADDRESS_2                   ;
    00000000G       00              01   FB 00029        CALLS   #1, DBG$IS_IT_ENTRY         ;
                    08              50   E9 00030        BLBC    R0, 3$                      ;
                              09    A4   9F 00033        PUSHAB  P.ADO                       ; 6940
                    65              01   FB 00036 2$:    CALLS   #1, DBG$PRINT               ;
                                    04   11 00039        BRB     4$                          ;
                    53        04    AC   D0 0003B 3$:    MOVL    ADDRESS, ADDRESS_2          ; 6942
0C          19      A2              05   E1 0003F 4$:    BBC     #5, 25(R2), 5$              ; 6948
                              28    A2   DD 00044        PUSHL   40(R2)                      ; 6950
    00000000G       00              01   FB 00047        CALLS   #1, DBG$PRINT_IDENTIFIER    ;
                                    09   11 0004E        BRB     6$                          ;
                                    53   DD 00050 5$:    PUSHL   ADDRESS_2                   ; 6952
    00000000G       00              01   FB 00052        CALLS   #1, DBG$PRINT_IDENTIFIER_PC ;
                    50 00000000G    00   D0 00059 6$:    MOVL    DBG$GB_STP_PTR, R0          ; 6957
                    13        01    A0   E8 00060        BLBS    1(R0), 7$                   ;
                              12    A4   9F 00064        PUSHAB  P.ADP                       ; 6959
                    65              01   FB 00067        CALLS   #1, DBG$PRINT               ;
                    7E              01   7D 0006A        MOVQ    #1, -(SP)                   ; 6960
                              04    AC   DD 0006D        PUSHL   ADDRESS                     ;
                  00000000G   00         03   FB 00070   CALLS   #3, DBG$INS_DECODE         ;
                                    04 00077 7$:         RET                                 ; 6961

; Routine Size:  120 bytes,    Routine Base:  DBG$CODE + 292C
```

```
;  6853          6962  1 ROUTINE PRINT_PC_INST_HANDLER(SIG_ARG_LIST) =
;  6854          6963  1 !
;  6855          6964  1 ! FUNCTION
;  6856          6965  1 !       Handler for errors that occur during the PRINT_PC_AND_INSTRUCTION
;  6857          6966  1 !       routine. We need a handler so that after displaying the error,
;  6858          6967  1 !       we will unwind to the caller of PRINT_PC_AND_INSTRUCTION, and
;  6859          6968  1 !       continue with any eventpoint processing that was being done.
;  6860          6969  1 !
;  6861          6970  1 ! INPUTS
;  6862          6971  1 !       SIG_ARG_LIST    - The signal argument list that we get from
;  6863          6972  1 !                         the condition handling facility.
;  6864          6973  1 !
;  6865          6974  1 ! OUTPUTS
;  6866          6975  1 !
;  6867          6976  2     BEGIN
;  6868          6977  2     MAP
;  6869          6978  2         SIG_ARG_LIST: REF BLOCK[,BYTE];
;  6870          6979  2
;  6871          6980  2
;  6872          6981  2     ! If informational just resignal
;  6873          6982  2     !
;  6874          6983  2     IF .SIG_ARG_LIST[CHF$L_SIG_NAME]
;  6875          6984  2     THEN
;  6876          6985  2         RETURN SS$_RESIGNAL;
;  6877          6986  2
;  6878          6987  2
;  6879          6988  2     ! If we are in the middle of an unwind then continue unwinding.
;  6880          6989  2     !
;  6881          6990  2     IF .SIG_ARG_LIST[CHF$L_SIG_NAME] EQL SS$_UNWIND
;  6882          6991  2     THEN
;  6883          6992  2         RETURN SS$_CONTINUE;
;  6884          6993  2
;  6885          6994  2
;  6886          6995  2     ! Otherwise, display a message saying that an error occurred during
;  6887          6996  2     ! instruction decode and then display the actual error that occured.
;  6888          6997  2     !
;  6889          6998  2     SIGNAL(DBG$_ERRINSDEC);
;  6890          6999  2     DBG$PUTMSG(.SIG_ARG_LIST);
;  6891          7000  2
;  6892          7001  2
;  6893          7002  2     ! Then unwind to the routine that called PRINT_PC_AND_INSTRUCTION.
;  6894          7003  2     !
;  6895          7004  2     $SETUNWIND();
;  6896          7005  2     RETURN SS$_CONTINUE;
;  6897          7006  1     END;


                                        0004 00000 PRINT_PC_INST_HANDLER:
                                                   .WORD   Save R2                          ;  6962
                        52        04    AC   D0 00002        MOVL    SIG_ARG_LIST, R2       ;  6983
                        06        04    A2   E9 00006        BLBC    4(R2), 1$              ;
                        50      0918    8F   3C 0C00A        MOVZWL  #2328, R0              ;  6985
                                          04 0000F          RET                            ;
                00000920    8F    04    A2   D1 00010 1$:     CMPL    4(R2), #2336           ;  6990
```

```
                                 1F  13 00018          BEQL    2$                                      ;
                        000280AB 8F  DD 0001A          PUSHL   #164011                                 ; 6998
                00000000G   00   01  FB 00020          CALLS   #1, LIB$SIGNAL                          ;
                                 52  DD 00027          PUSHL   R2                                      ; 6999
                00000000G   00   01  FB 00029          CALLS   #1, DBG$PUTMSG                          ;
                                 7E  7C 00030          CLRQ    -(SP)                                   ; 7004
                00000000G   00   02  FB 00032          CALLS   #2, SYS$UNWIND                          ;
                             50  01  D0 00039 2$:      MOVL    #1, R0                                  ; 7005
                                 04  0003C            RET                                             ; 7006

; Routine Size:  61 bytes,    Routine Base:  DBG$CODE + 29A4
```

```
;  6899          7007  1 ROUTINE SHOW_EVENT_ENTRY(EVENT_ENTRY): NOVALUE =
;  6900          7008  1 !
;  6901          7009  1 ! FUNCTION
;  6902          7010  1 !       This routine displays an event entry as in:
;  6903          7011  1 !
;  6904          7012  1 !       SHOW [ BREAK ! TRACE ! WATCH ]
;  6905          7013  1 !
;  6906          7014  1 ! INPUTS
;  6907          7015  1 !       EVENT_ENTRY :           Pointer to event entry.
;  6908          7016  1 !
;  6909          7017  1 ! OUTPUTS
;  6910          7018  1 !       Displays the event entry via DBG$PRINT.
;  6911          7019  1 !
;  6912          7020  1
;  6913          7021  2     BEGIN
;  6914          7022  2
;  6915          7023  2     MAP
;  6916          7024  2         EVENT_ENTRY: REF EVENT$EVENT_DESCRIPTOR; ! Event Entry Pointer
;  6917          7025  2
;  6918          7026  2
;  6919          7027  2     LOCAL
;  6920          7028  2         VMS_DESC: DBG$STG_DESC,             !
;  6921          7029  2         VAL_DESC: REF DBG$VALDESC,          !
;  6922          7030  2         WHEN_ENTRY:                         ! When Entry Pointer
;  6923          7031  2                 REF EVENT$WHEN_DESCRIPTOR,!
;  6924          7032  2         DO_LIST_ENTRY:                      ! DO List Entry Pointer
;  6925          7033  2                 REF EVENT$DO_LIST_DESCRIPTOR,!
;  6926          7034  2         STRING_DESCRIPTOR: BLOCK[8,BYTE],! String descriptor
;  6927          7035  2         OUTPUT_BUFFER:                      ! Temporary formatting buffer
;  6928          7036  2                 VECTOR[TTY_OUT_WIDTH,BYTE],!
;  6929          7037  2         DUMMY;                              ! Dummy routine argument
;  6930          7038  2
;  6931          7039  2
;  6932          7040  2
;  6933          7041  2     ! Skip STEPS, SKIPS, and IGNOR entries.
;  6934          7042  2     !
;  6935          7043  2     IF .EVENT_ENTRY [EVENT$B_CMD_TYPE] EQLU EVENT$K_TYPE_STEPS OR
;  6936          7044  2        .EVENT_ENTRY [EVENT$B_CMD_TYPE] EQLU EVENT$K_TYPE_SKIPS OR
;  6937          7045  2        .EVENT_ENTRY [EVENT$B_CMD_TYPE] EQLU EVENT$K_TYPE_IGNOR OR
;  6938          7046  2        .EVENT_ENTRY [EVENT$B_CMD_TYPE] EQLU EVENT$K_TYPE_SSINT
;  6939          7047  2     THEN
;  6940          7048  2         RETURN;
;  6941          7049  2
;  6942          7050  2
;  6943          7051  2     ! Setup a string descriptor.
;  6944          7052  2     !
;  6945          7053  2     STRING_DESCRIPTOR [DSC$B_DTYPE] = DSC$K_DTYPE_T;
;  6946          7054  2     STRING_DESCRIPTOR [DSC$B_CLASS] = DSC$K_CLASS_S;
;  6947          7055  2     STRING_DESCRIPTOR [DSC$A_POINTER] = 0;
;  6948          7056  2     STRING_DESCRIPTOR [DSC$W_LENGTH] = 0;
;  6949          7057  2
;  6950          7058  2
;  6951          7059  2     ! For watchpoint events, see whether the watched Primary
;  6952          7060  2     ! is still valid. If not, convert the Primary to a Volatile
;  6953          7061  2     ! Value Descriptor and display an informational to that effect.
;  6954          7062  2     !
;  6955          7063  2     IF .EVENT_ENTRY[EVENT$B_SUB_KIND] EQL EVENT$K_ACC_MDFY
```

```
;  6956          7064  2     THEN
;  6957          7065  3         BEGIN
;  6958          7066  3         LOCAL
;  6959          7067  3             PRIMARY,
;  6960          7068  3             SYMID_LIST,
;  6961          7069  3             VALDESC,
;  6962          7070  3             V_VALDESC: REF DBG$VALDESC;
;  6963          7071  3
;  6964          7072  3
;  6965          7073  3             ! Copy the Primary since PRIM_TO_VAL sometimes has the side effect
;  6966          7074  3             ! of modifying its argument. This copy is done into temporary
;  6967          7075  3             ! memory (fourth parameter is FALSE). Then call PRIM_TO_VAL
;  6968          7076  3             ! and get a Volatile Value Descriptor (this will have
;  6969          7077  3             ! the real address of the watched variable embedded in it).
;  6970          7078  3             ! PRIM_TO_VAL is a cover routine for DBG$PRIM_TO_VAL; it has
;  6971          7079  3             ! a handler which sets INVALID_FLAG if the Primary is no longer
;  6972          7080  3             ! valid (has gone out of scope).
;  6973          7081  3             !
;  6974          7082  3             DBG$NCOPY_DESC (.EVENT_ENTRY[EVENT$L_PRIMARY], PRIMARY, DUMMY, FALSE);
;  6975          7083  3             INVALID_FLAG = FALSE;
;  6976          7084  3             PRIM_TO_VAL (.PRIMARY, DBG$K_V_VALUE_DESC, V_VALDESC);
;  6977          7085  3
;  6978          7086  3
;  6979          7087  3             ! Check whether the Primary is still valid, i.e., whether it still
;  6980          7088  3             ! points to the same storage as it did when the watchpoint was set.
;  6981          7089  3             !
;  6982          7090  3             IF .INVALID_FLAG OR
;  6983          7091  3                CH$NEQ (12, V_VALDESC[DBG$A_VALUE_VMSDESC],
;  6984          7092  3                        12, EVENT_ENTRY[EVENT$A_VMSDESC])
;  6985          7093  3             THEN
;  6986          7094  4                 BEGIN
;  6987          7095  4
;  6988          7096  4
;  6989          7097  4                 ! Print an informational saying the Primary is invalid.
;  6990          7098  4                 !
;  6991          7099  4                 DBG$PRINT ($AC ('%DEBUG-I-WATCHVAR, watched variable '));
;  6992          7100  4                 DBG$PRINT_IDENTIFIER(.EVENT_ENTRY[EVENT$L_PRIMARY]);
;  6993          7101  4                 IF .INVALID_FLAG
;  6994          7102  4                 THEN
;  6995          7103  4                     DBG$PRINT ($AC (' has gone out of scope'))
;  6996          7104  4                 ELSE
;  6997          7105  4                     DBG$PRINT ($AC (' now points to a different address'));
;  6998          7106  4                 DBG$NEWLINE();
;  6999          7107  4
;  7000          7108  4
;  7001          7109  4                 ! Free up the Primary.
;  7002          7110  4                 !
;  7003          7111  4                 IF DBG$NGET_SYMID (.EVENT_ENTRY[EVENT$L_PRIMARY], SYMID_LIST, DUMMY)
;  7004          7112  4                 THEN
;  7005          7113  4                     DBG$STA_UNLOCK_SYMID (.SYMID_LIST);
;  7006          7114  4                 DBG$NFREE_DESC (.EVENT_ENTRY[EVENT$L_PRIMARY], DUMMY);
;  7007          7115  4
;  7008          7116  4
;  7009          7117  4                 ! Replace it with the Volatile Value Descriptor.
;  7010          7118  4                 !
;  7011          7119  4                 V_VALDESC = DBG$MAKE_VAL_DESC(EVENT_ENTRY[EVENT$A_VMSDESC], DBG$K_V_VALUE_DESC);
;  7012          7120  4                 IF DBG$NGET_SYMID (.V_VALDESC, SYMID_LIST, DUMMY)
```

```
;  7013          7121  4              THEN
;  7014          7122  4                  DBG$STA_LOCK_SYMID (.SYMID_LIST);
;  7015          7123  4              DBG$NCOPY_DESC (.V_VALDESC, EVENT_ENTRY[EVENT$L_PRIMARY], DUMMY, TRUE);
;  7016          7124  3              END;
;  7017          7125  2          END;
;  7018          7126  2
;  7019          7127  2
;  7020          7128  2      ! Print the event type: breakpoint, tracepoint, or watchpoint.
;  7021          7129  2      !
;  7022          7130  2      SELECTONE .EVENT_ENTRY[EVENT$B_CMD_TYPE] OF
;  7023          7131  2          SET
;  7024          7132  2
;  7025          7133  2          [EVENT$K_TYPE_BREAK]:
;  7026          7134  2              DBG$PRINT($AC('breakpoint'));
;  7027          7135  2
;  7028          7136  2          [EVENT$K_TYPE_TRACE]:
;  7029          7137  2              DBG$PRINT($AC('tracepoint'));
;  7030          7138  2
;  7031          7139  2          [EVENT$K_TYPE_WATCH]:
;  7032          7140  2              DBG$PRINT($AC('watchpoint'));
;  7033          7141  2
;  7034          7142  2          TES;
;  7035          7143  2
;  7036          7144  2
;  7037          7145  2      ! Display the event kind (access, exception, instruction).
;  7038          7146  2      !
;  7039          7147  2      SELECTONE .EVENT_ENTRY [EVENT$B_CMD_KIND] OF
;  7040          7148  2          SET
;  7041          7149  2
;  7042          7150  2
;  7043          7151  2          ! This is an access (read, write, modify, execute) kind
;  7044          7152  2          ! of event point.  Display the address.
;  7045          7153  2          !
;  7046          7154  2          [EVENT$K_KIND_ACC]:
;  7047          7155  3              BEGIN
;  7048          7156  3
;  7049          7157  3
;  7050          7158  3              ! Print the access kind if read, write, or modify.  If the address
;  7051          7159  3              ! is an entry point, indicate that it is a routine.
;  7052          7160  3              !
;  7053          7161  3              IF .EVENT_ENTRY[EVENT$B_CMD_TYPE] NEQU EVENT$K_TYPE_WATCH
;  7054          7162  3              THEN
;  7055          7163  4                  BEGIN
;  7056          7164  4                  SELECTONE .EVENT_ENTRY[EVENT$B_SUB_KIND] OF
;  7057          7165  4                      SET
;  7058          7166  4
;  7059          7167  4                      [EVENT$K_ACC_READ]:
;  7060          7168  4                          DBG$PRINT($AC(' on read of '));
;  7061          7169  4
;  7062          7170  4                      [EVENT$K_ACC_WRIT]:
;  7063          7171  4                          DBG$PRINT($AC(' on write of '));
;  7064          7172  4
;  7065          7173  4                      [EVENT$K_ACC_MDFY]:
;  7066          7174  4                          DBG$PRINT($AC(' on modify of '));
;  7067          7175  4
;  7068          7176  4                      [EVENT$K_ACC_EXEC]:
;  7069          7177  4                          DBG$PRINT($AC(' at '));
```

```
;  7070     7178  4
;  7071     7179  4                    [EVENT$K_ACC_RTRN]:
;  7072     7180  4                        DBG$PRINT($AC(' on return from '));
;  7073     7181  4
;  7074     7182  4                    TES;
;  7075     7183  4
;  7076     7184  4                END
;  7077     7185  4
;  7078     7186  4
;  7079     7187  4            ! For watchpoints, simply say "watchpoint of".
;  7080     7188  4            !
;  7081     7189  3            ELSE
;  7082     7190  3                DBG$PRINT($AC (' of '));
;  7083     7191  3
;  7084     7192  3
;  7085     7193  3            ! We print the address next.  If the address is a routine address
;  7086     7194  3            ! (a CALLS/CALLG entry point), we refer to it as "routine XXX",
;  7087     7195  3            ! where XXX is the routine name.  If it is not a routine, we omit
;  7088     7196  3            ! the "routine" designation.
;  7089     7197  3            !
;  7090     7198  3            IF .EVENT_ENTRY[EVENT$V_BREAK_ADDRESS] OR
;  7091     7199  3               DBG$IS_IT_ENTRY(.EVENT_ENTRY[EVENT$L_ADDRESS] - 2)
;  7092     7200  3            THEN
;  7093     7201  3                DBG$PRINT($AC('routine '));
;  7094     7202  3
;  7095     7203  3            DBG$PRINT_IDENTIFIER(.EVENT_ENTRY[EVENT$L_PRIMARY]);
;  7096     7204  3
;  7097     7205  3
;  7098     7206  3            ! Check for the /SOURCE or /NOSOURCE override switch.  If set, we
;  7099     7207  3            ! print "[source]" or "[nosource]", as appropriate.
;  7100     7208  3            !
;  7101     7209  3            IF .EVENT_ENTRY[EVENT$V_OVRD_SOURCE]
;  7102     7210  3            THEN
;  7103     7211  4                BEGIN
;  7104     7212  4                IF .EVENT_ENTRY[EVENT$V_STEP_SOURCE]
;  7105     7213  4                THEN
;  7106     7214  4                    DBG$PRINT($AC(' [source]'))
;  7107     7215  4
;  7108     7216  4                ELSE
;  7109     7217  4                    DBG$PRINT($AC(' [nosource]'));
;  7110     7218  4
;  7111     7219  3                END;
;  7112     7220  3
;  7113     7221  2            END;                        ! End of case for access kind of event
;  7114     7222  2
;  7115     7223  2
;  7116     7224  2        ! This is an instruction type.
;  7117     7225  2        !
;  7118     7226  2        [EVENT$K_KIND_INS]:
;  7119     7227  3            BEGIN
;  7120     7228  3
;  7121     7229  3
;  7122     7230  3            ! Display the /SOURCE or /NOSOURCE qualifier if specified.
;  7123     7231  3            !
;  7124     7232  3            IF .EVENT_ENTRY[EVENT$V_OVRD_SOURCE]
;  7125     7233  3            THEN
;  7126     7234  4                BEGIN
```

```
;  7127          7235  4              IF .EVENT_ENTRY[EVENT$V_STEP_SOURCE]
;  7128          7236  4              THEN
;  7129          7237  4                  DBG$PRINT($AC('/source'))
;  7130          7238  4
;  7131          7239  4              ELSE
;  7132          7240  4                  DBG$PRINT($AC('/nosource'));
;  7133          7241  4
;  7134          7242  3              END;
;  7135          7243  3
;  7136          7244  3
;  7137          7245  3          ! Display the /SOURCE or /NOSOURCE qualifier if specified.
;  7138          7246  3          !
;  7139          7247  3          IF .EVENT_ENTRY[EVENT$V_OVRD_NOSYSTEM]
;  7140          7248  3          THEN
;  7141          7249  4              BEGIN
;  7142          7250  4              IF .EVENT_ENTRY[EVENT$V_STEP_NOSYSTEM]
;  7143          7251  4              THEN
;  7144          7252  4                  DBG$PRINT($AC('/nosystem'))
;  7145          7253  4
;  7146          7254  4              ELSE
;  7147          7255  4                  DBG$PRINT($AC('/system'));
;  7148          7256  4
;  7149          7257  3              END;
;  7150          7258  3
;  7151          7259  3
;  7152          7260  3          ! Display the /OVER or /INTO qualifier if specified.
;  7153          7261  3          !
;  7154          7262  3          IF .EVENT_ENTRY[EVENT$V_OVRD_OVER]
;  7155          7263  3          THEN
;  7156          7264  4              BEGIN
;  7157          7265  4              IF .EVENT_ENTRY[EVENT$V_STEP_OVER]
;  7158          7266  4              THEN
;  7159          7267  4                  DBG$PRINT($AC('/over'))
;  7160          7268  4
;  7161          7269  4              ELSE
;  7162          7270  4                  DBG$PRINT($AC('/into'));
;  7163          7271  4
;  7164          7272  3              END;
;  7165          7273  3
;  7166          7274  3
;  7167          7275  3          ! Display the instruction type (calls, branches, all, or user
;  7168          7276  3          ! list.
;  7169          7277  3          !
;  7170          7278  3          DBG$PRINT   ($AC    (' on !AC'),
;  7171          7279  3                       SELECTONE .EVENT_ENTRY [EVENT$B_SUB_KIND] OF
;  7172          7280  3                           SET
;  7173          7281  3                           [EVENT$K_INS_CALL]:
;  7174          7282  3                               $AC ('calls:');
;  7175          7283  3                           [EVENT$K_INS_BRAN]:
;  7176          7284  3                               $AC ('branches:');
;  7177          7285  3                           [EVENT$K_INS_EVRY]:
;  7178          7286  3                               $AC ('instructions');
;  7179          7287  3                           [EVENT$K_INS_USER]:
;  7180          7288  3                               $AC ('instructicn(s):');
;  7181          7289  3                           [EVENT$K_INS_LINE]:
;  7182          7290  3                               $AC ('lines');
;  7183          7291  3                           TES
```

```
;  7184          7292  3                          );
;  7185          7293  3
;  7186          7294  2              END;
;  7187          7295  2
;  7188          7296  2
;  7189          7297  2          ! This is an exception type.
;  7190          7298  2          !
;  7191          7299  2          [EVENT$K_KIND_EXC]:
;  7192          7300  2              DBG$PRINT($AC(' on exception'));
;  7193          7301  2
;  7194          7302  2          TES;
;  7195          7303  2
;  7196          7304  2
;  7197          7305  2      ! If this entry is silent, say so.
;  7198          7306  2      !
;  7199          7307  2      IF .EVENT_ENTRY[EVENT$V_SILENT] THEN DBG$PRINT($AC(' [silent]'));
;  7200          7308  2
;  7201          7309  2
;  7202          7310  2      ! If this entry is temporary, say so.
;  7203          7311  2      !
;  7204          7312  2      IF .EVENT_ENTRY[EVENT$V_ONCE_ONLY] THEN DBG$PRINT($AC(' [temporary]'));
;  7205          7313  2
;  7206          7314  2
;  7207          7315  2      ! If this entry is an instruction type (/CALL, /BRANCH, etc.) and
;  7208          7316  2      ! has an opcode bit map (i.e., is not for all instructions),
;  7209          7317  2      ! display the opcode mnemonics indicated.
;  7210          7318  2      !
;  7211          7319  2      IF .EVENT_ENTRY [EVENT$B_CMD_KIND] EQLU EVENT$K_KIND_INS AND
;  7212          7320  2         .EVENT_ENTRY [EVENT$L_OPCODE_LIST] NEQA 0
;  7213          7321  2      THEN
;  7214          7322  3          BEGIN
;  7215          7323  3
;  7216          7324  3
;  7217          7325  3          ! Declare a pointer to an opcode list, and an opcode
;  7218          7326  3          ! variable.
;  7219          7327  3          !
;  7220          7328  3          LOCAL
;  7221          7329  3              OPCODE_LIST: REF BITVECTOR [512],
;  7222          7330  3              COLUMN;
;  7223          7331  3
;  7224          7332  3
;  7225          7333  3          ! Point to the opcode list, and set the column to 0.
;  7226          7334  3          !
;  7227          7335  3          OPCODE_LIST = .EVENT_ENTRY [EVENT$L_OPCODE_LIST];
;  7228          7336  3          COLUMN = -1;
;  7229          7337  3          INCR OPCODE FROM 0 TO 511 DO
;  7230          7338  4              BEGIN
;  7231          7339  4              IF .OPCODE_LIST [.OPCODE] THEN
;  7232          7340  5                  BEGIN
;  7233          7341  5                  LOCAL INDEX;
;  7234          7342  5                  COLUMN = (.COLUMN + 1) AND 7;
;  7235          7343  5                  IF .COLUMN EQLU 0 THEN DBG$NEWLINE();
;  7236          7344  5                  INDEX = .DBG$OPCODE_KIND_TABLE[.OPCODE];
;  7237          7345  5                  DBG$PRINT($AC ('!_!AD'), 6,
;  7238          7346  5                                  DBG$OPCODE_NAME_TABLE[.INDEX,0,0,0,0]);
;  7239          7347  4                  END;
;  7240          7348  4
```

```
;  7241     7349  3              END;
;  7242     7350  3
;  7243     7351  3          DBG$NEWLINE();
;  7244     7352  3          END
;  7245     7353  3
;  7246     7354  3
;  7247     7355  3      ! Otherwise, just print the line.
;  7248     7356  3      !
;  7249     7357  2      ELSE
;  7250     7358  2          DBG$NEWLINE ();
;  7251     7359  2
;  7252     7360  2
;  7253     7361  2      ! If the after count is not the default (1), print it.
;  7254     7362  2      !
;  7255     7363  2      IF .EVENT_ENTRY [EVENT$L_AFTER_COUNT] NEQU 1
;  7256     7364  2      THEN
;  7257     7365  3          BEGIN
;  7258     7366  3          DBG$PRINT($AC('   /after: !UL'), .EVENT_ENTRY[EVENT$L_AFTER_COUNT]);
;  7259     7367  3          DBG$NEWLINE();
;  7260     7368  2          END;
;  7261     7369  2
;  7262     7370  2
;  7263     7371  2      ! If there is a WHEN entry, print it.
;  7264     7372  2      !
;  7265     7373  2      IF .EVENT_ENTRY [EVENT$L_WHEN] NEQA 0
;  7266     7374  2      THEN
;  7267     7375  3          BEGIN
;  7268     7376  3          LOCAL
;  7269     7377  3              STRING :    REF VECTOR [, WORD];
;  7270     7378  3
;  7271     7379  3          WHEN_ENTRY = .EVENT_ENTRY [EVENT$L_WHEN];
;  7272     7380  3          STRING = .WHEN_ENTRY [EVENT$L_WHEN_POINT];
;  7273     7381  3          DBG$PRINT($AC('   when (!AD)'), .STRING[0] - 1, STRING[1]);
;  7274     7382  3          DBG$NEWLINE();
;  7275     7383  2          END;
;  7276     7384  2
;  7277     7385  2
;  7278     7386  2      ! If there is a DO list entry, print it.
;  7279     7387  2      !
;  7280     7388  2      IF .EVENT_ENTRY [EVENT$L_DO] NEQA 0
;  7281     7389  2      THEN
;  7282     7390  3          BEGIN
;  7283     7391  3          LOCAL
;  7284     7392  3              STRING :    REF VECTOR [, WORD];
;  7285     7393  3
;  7286     7394  3          DO_LIST_ENTRY = .EVENT_ENTRY [EVENT$L_DO];
;  7287     7395  3          STRING = .DO_LIST_ENTRY [EVENT$L_DO_LIST_POINT];
;  7288     7396  3          DBG$PRINT($AC('   do (!AD)'), .STRING[0] - 1, STRING[1]);
;  7289     7397  3          DBG$NEWLINE();
;  7290     7398  2          END;
;  7291     7399  2
;  7292     7400  1      END;


                                                .PSECT  DBG$PLIT,NOWRT,  SHR,  PIC,0
```

```
48 43 54 41 57 2D 49 2D 47 55 42 45 44 25 24  003A7 P.ADQ:  .ASCII  \%%DEBUG-I-WATCHVAR, watched variable \
61 76 20 64 65 68 63 74 61 77 20 2C 52 41 56  003B6
                        20 65 6C 62 61 69 72  003C5
20 74 75 6F 20 65 6E 6F 67 20 73 61 68 20 16  003CC P.ADR:  .ASCII  <22>\ has gone out of scope\
                        65 70 6F 63 73 20 66 6F  003DB
6F 74 20 73 74 6E 69 6F 70 20 77 6F 6E 20 22  003E3 P.ADS:  .ASCII  \" now points to a different address\
64 61 20 74 6E 65 72 65 66 66 69 64 20 61 20  003F2
                        73 73 65 72 64 00401
                  74 6E 69 6F 70 6B 61 65 72 62 0A  00406 P.ADT:  .ASCII  <10>\breakpoint\
                  74 6E 69 6F 70 65 63 61 72 74 0A  00411 P.ADU:  .ASCII  <10>\tracepoint\
                  74 6E 69 6F 70 68 63 74 61 77 0A  0041C P.ADV:  .ASCII  <10>\watchpoint\
            20 66 6F 20 64 61 65 72 20 6E 6F 20 0C  00427 P.ADW:  .ASCII  <12>\ on read of \
         20 66 6F 20 65 74 69 72 77 20 6E 6F 20 0D  00434 P.ADX:  .ASCII  <13>\ on write of \
20 66 6F 20 79 66 69 64 6F 6D 20 6E 6F 20 0E  00442 P.ADY:  .ASCII  <14>\ on modify of \
                        20 74 61 20 04  00451 P.ADZ:  .ASCII  <4>\ at \
6F 72 66 20 6E 72 75 74 65 72 20 6E 6F 20 10  00456 P.AEA:  .ASCII  <16>\ on return from \
                        20 6D  00465
                        20 66 6F 20 04  00467 P.AEB:  .ASCII  <4>\ of \
                  20 65 6E 69 74 75 6F 72 08  0046C P.AEC:  .ASCII  <8>\routine \
               5D 65 63 72 75 6F 73 5B 20 09  00475 P.AED:  .ASCII  <9>\ [source]\
            5D 65 63 72 75 6F 6E 5B 20 0B  0047F P.AEE:  .ASCII  <11>\ [nosource]\
               65 63 72 75 6F 73 2F 07  0048B P.AEF:  .ASCII  <7>\/source\
            65 63 72 75 6F 73 6F 6E 2F 09  00493 P.AEG:  .ASCII  <9>\/nosource\
            6D 65 74 73 79 73 6F 6E 2F 09  0049D P.AEH:  .ASCII  <9>\/nosystem\
               6D 65 74 73 79 73 2F 07  004A7 P.AEI:  .ASCII  <7>\/system\
                  72 65 76 6F 2F 05  004AF P.AEJ:  .ASCII  <5>\/over\
                  6F 74 6E 69 2F 05  004B5 P.AEK:  .ASCII  <5>\/into\
               43 41 21 20 6E 6F 20 07  004BB P.AEL:  .ASCII  <7>\ on !AC\
                  3A 73 6C 6C 61 63 06  004C3 P.AEM:  .ASCII  <6>\calls:\
            3A 73 65 68 63 6E 61 72 62 09  004CA P.AEN:  .ASCII  <9>\branches:\
         73 6E 6F 69 74 63 75 72 74 73 6E 69 0C  004D4 P.AEO:  .ASCII  <12>\instructions\
29 73 28 6E 6F 69 74 63 75 72 74 73 6E 69 0F  004E1 P.AEP:  .ASCII  <15>\instruction(s):\
                                    3A  004F0
                        73 65 6E 69 6C 05  004F1 P.AEQ:  .ASCII  <5>\lines\
      6E 6F 69 74 70 65 63 78 65 20 6E 6F 20 0D  004F7 P.AER:  .ASCII  <13>\ on exception\
               5D 74 6E 65 6C 69 73 5B 20 09  00505 P.AES:  .ASCII  <9>\ [silent]\
         5D 79 72 61 72 6F 70 6D 65 74 5B 20 0C  0050F P.AET:  .ASCII  <12>  [temporary]\
                        44 41 21 5F 21 05  0051C P.AEU:  .ASCII  <5>\!_!AD\
4C 55 21 20 3A 72 65 74 66 61 2F 20 20 20 0E  00522 P.AEV:  .ASCII  <14>\   /after: 'UL\
   29 44 41 21 28 20 6E 65 68 77 20 20 20 0D  00531 P.AEW:  .ASCII  <13>\   when (!AD)\
         29 44 41 21 28 20 6F 64 20 20 20 0B  0053F P.AEX:  .ASCII  <11>\   do (!AD)\


                                    .PSECT  DBG$CODE,NOWRT,  SHR,  PIC,0

                              0FFC 00000 SHOW_EVENT_ENTRY:
                                    .WORD   Save R2,R3,R4,R5,R6,R7,R8,R9,R10,R11          ; 7007
5B 00000000'G  00  9E 00002         MOVAB   DBG$NGET_SYMID, R11
5A 00000000G   00  9E 00009         MOVAB   DBG$PRINT_IDENTIFIER, R10
59 00000000'   EF  9E 00010         MOVAB   INVALID_FLAG, R9
58 00000000G   00  9E 00017         MOVAB   DBG$NEWLINE, R8
57 00000000G   00  9E 0001E         MOVAB   DBG$PRINT, R7
56 00000000'   EF  9E 00025         MOVAB   P.ADQ, R6
5E     FF58    CE  9E 0002C         MOVAB   -168(SP), SP
54       04    AC  D0 00031         MOVL    EVENT_ENTRY, R4                               ; 7043
55       14    A4  9E 00035         MOVAB   20(R4), R5
```

```
                        03              65  91 00039          CMPB    (R5), #3                                ;
                                        0D  13 0003C          BEQL    1$                                      ;
                        04              65  91 0003E          CMPB    (R5), #4                                ; 7044
                                        08  13 00041          BEQL    1$                                      ;
                        05              65  91 00043          CMPB    (R5), #5                                ; 7045
                                        03  13 00046          BEQL    1$                                      ;
                        06              65  91 00048          CMPB    (R5), #6                                ; 7046
                                        01  12 0004B 1$:       BNEQ    2$                                      ;
                                            04 0004D          RET                                             ;
                    EC  AD 010E0000     8F  D0 0004E 2$:      MOVL    #17694720, STRING_DESCRIPTOR            ; 7056
                           F0  AD       D4 00056              CLRL    STRING_DESCRIPTOR+4                     ; 7055
                        02  02  A5      91 00059              CMPB    2(R5), #2                               ; 7063
                                        03  13 0005D          BEQL    3$                                      ;
                                    00B1    31 0005F          BRW     9$                                      ;
                                        7E  D4 00062 3$:      CLRL    -(SP)                                   ; 7082
                               10   AE   9F 00064              PUSHAB  DUMMY                                   ;
                               08   AE   9F 00067              PUSHAB  PRIMARY                                 ;
                               28   A4   DD 0006A              PUSHL   40(R4)                                  ;
                00000000G      00       04 FB 0006D          CALLS   #4, DBG$NCOPY_DESC                      ;
                                        69  D4 00074          CLRL    INVALID_FLAG                            ; 7083
                               04   AE   9F 00076              PUSHAB  V_VALDESC                               ; 7084
                            7E  83   8F   9A 00079              MOVZBL  #131, -(SP)                             ;
                               08   AE   DD 0007D              PUSHL   PRIMARY                                 ;
                          0000V  CF       03 FB 00080          CALLS   #3, PRIM_TO_VAL                         ;
                                        0C  69  E8 00085          BLBS    INVALID_FLAG, 4$                        ; 7090
                                        50  04  AE DO 00088          MOVL    V_VALDESC, R0                           ; 7091
                34  A4      14  A0          0C  29 0008C          CMPC3   #12, 20(R0), 52(R4)                     ; 7092
                                        7F  13 00092          BEQL    9$                                      ;
                                        56  DD 00094 4$:      PUSHL   R6                                      ; 7099
                            67          01  FB 00096          CALLS   #1, DBG$PRINT                           ;
                               28   A4   DD 00099              PUSHL   40(R4)                                  ; 7100
                            6A          01  FB 0009C          CALLS   #1, DBG$PRINT_IDENTIFIER                ;
                            05          69  E9 0009F          BLBC    INVALID_FLAG, 5$                        ; 7101
                               25   A6   9F 000A2              PUSHAB  P.ADR                                   ; 7103
                                        03  11 000A5          BRB     6$                                      ;
                               3C   A6   9F 000A7 5$:       PUSHAB  P.ADS                                   ; 7105
                            67          01  FB 000AA 6$:      CALLS   #1, DBG$PRINT                           ;
                            68          00  FB 000AD          CALLS   #0, DBG$NEWLINE                         ; 7106
                               0C   AE   9F 000B0              PUSHAB  DUMMY                                   ; 7111
                               0C   AE   9F 000B3              PUSHAB  SYMID_LIST                              ;
                               28   A4   DD 000B6              PUSHL   40(R4)                                  ;
                            6B          03  FB 000B9          CALLS   #3, DBG$NGET_SYMID                      ;
                            0A          50  E9 000BC          BLBC    R0, 7$                                  ;
                               08   AE   DD 000BF              PUSHL   SYMID_LIST                              ; 7113
                00000000G      00       01 FB 000C2          CALLS   #1, DBG$STA_UNLOCK_SYMID                ;
                               0C   AE   9F 000C9 7$:       PUSHAB  DUMMY                                   ; 7114
                               28   A4   DD 000CC              PUSHL   40(R4)                                  ;
                00000000G      00       02 FB 000CF          CALLS   #2, DBG$NFREE_DESC                      ;
                            7E  83   8F   9A 000D6              MOVZBL  #131, -(SP)                             ; 7119
                               34   A4   9F 000DA              PUSHAB  52(R4)                                  ;
                00000000G      00       02 FB 000DD          CALLS   #2, DBG$MAKE_VAL_DESC                   ;
                        04  AE          50  D0 000E4          MOVL    R0, V_VALDESC                           ;
                               0C   AE   9F 000E8              PUSHAB  DUMMY                                   ; 7120
                               0C   AE   9F 000EB              PUSHAB  SYMID_LIST                              ;
                               0C   AE   DD 000EE              PUSHL   V_VALDESC                               ;
                            6B          03  FB 000F1          CALLS   #3, DBG$NGET_SYMID                      ;
                            0A          50  E9 000F4          BLBC    R0, 8$                                  ;
```

```
                        08   AE   DD 000F7          PUSHL   SYMID_LIST                                  ; 7122
00000000G  00                01   FB 000FA          CALLS   #1, DBG$STA_LOCK_SYMID
                             01   DD 00101 8$:      PUSHL   #1                                          ; 7123
                        10   AE   9F 00103          PUSHAB  DUMMY
                        28   A4   9F 00106          PUSHAB  40(R4)
                        10   AE   DD 00109          PUSHL   V_VALDESC
00000000G  00                04   FB 0010C          CALLS   #4, DBG$NCOPY_DESC
                             65   95 00113 9$:      TSTB    (R5)                                        ; 7133
                             05   12 00115          BNEQ    10$
                        5F   A6   9F 00117          PUSHAB  P.ADT                                       ; 7134
                             12   11 0011A          BRB     12$
                   01            65   91 0011C 10$:      CMPB    (R5), #1                               ; 7136
                             05   12 0011F          BNEQ    11$
                        6A   A6   9F 00121          PUSHAB  P.ADU                                       ; 7137
                             08   11 00124          BRB     12$
                   02            65   91 00126 11$:      CMPB    (R5), #2                               ; 7139
                             06   12 00129          BNEQ    13$
                        75   A6   9F 0012B          PUSHAB  P.ADV                                       ; 7140
                   67            01   FB 0012E 12$:      CALLS   #1, DBG$PRINT
                        01   A5   95 00131 13$:      TSTB    1(R5)                                       ; 7154
                             03   13 00134          BEQL    14$
                           0082   31 00136          BRW     27$
                   02            65   91 00139 14$:      CMPB    (R5), #2                               ; 7161
                             3B   13 0013C          BEQL    19$
                        02   A5   95 0013E          TSTB    2(R5)                                       ; 7167
                             06   12 00141          BNEQ    15$
                      0080   C6   9F 00143          PUSHAB  P.ADW                                       ; 7168
                             34   11 00147          BRB     20$
                   01   02   A5   91 00149 15$:      CMPB    2(R5), #1                                  ; 7170
                             06   12 0014D          BNEQ    16$
                      008D   C6   9F 0014F          PUSHAB  P.ADX                                       ; 7171
                             28   11 00153          BRB     20$
                   02   02   A5   91 00155 16$:      CMPB    2(R5), #2                                  ; 7173
                             06   12 00159          BNEQ    17$
                      009B   C6   9F 0015B          PUSHAB  P.ADY                                       ; 7174
                             1C   11 0015F          BRB     20$
                   03   02   A5   91 00161 17$:      CMPB    2(R5), #3                                  ; 7176
                             06   12 00165          BNEQ    18$
                      00AA   C6   9F 00167          PUSHAB  P.ADZ                                       ; 7177
                             10   11 0016B          BRB     20$
                   04   02   A5   91 0016D 18$:      CMPB    2(R5), #4                                  ; 7179
                             0D   12 00171          BNEQ    21$
                      00AF   C6   9F 00173          PUSHAB  P.AEA                                       ; 7180
                             04   11 00177          BRB     20$
                      00C0   C6   9F 00179 19$:      PUSHAB  P.AEB                                       ; 7190
                   67            01   FB 0017D 20$:      CALLS   #1, DBG$PRINT
0F       19   A4                 05   E0 00180 21$:      BBS     #5, 25(R4), 22$                        ; 7198
7E       2C   A4                 02   C3 00185          SUBL3   #2, 44(R4), -(SP)                      ; 7199
     00000000G   00              01   FB 0018A          CALLS   #1, DBG$IS_IT_ENTRY
                   07            50   E9 00191          BLBC    R0, 23$
                      00C5   C6   9F 00194 22$:      PUSHAB  P.AEC                                       ; 7201
                   67            01   FB 00198          CALLS   #1, DBG$PRINT
                   28   A4   DD 0019B 23$:      PUSHL   40(R4)                                          ; 7203
                   6A            01   FB 0019E          CALLS   #1, DBG$PRINT_IDENTIFIER
03       18   A4                 04   E0 001A1          BBS     #4, 24(R4), 24$                        ; 7209
                           00BA   31 001A6          BRW     47$
06       18   A4                 05   E1 001A9 24$:      BBC     #5, 24(R4), 25$                        ; 7212
```

```
                     00CE   C6  9F 001AE          PUSHAB  P.AED                           ; 7214
                            04  11 001B2          BRB     26$                             ;
                     00D8   C6  9F 001B4 25$:     PUSHAB  P.AEE                           ; 7217
                          00A5  31 001B8 26$:     BRW     46$                             ;
                        01  01  A5  91 001BB 27$:     CMPB    1(R5), #1                   ; 7226
                            03  13 001BF          BEQL    28$                             ;
                          0092  31 001C1          BRW     45$                             ;
                        52  18  A4  9E 001C4 28$:     MOVAB   24(R4), R2                  ; 7232
                    11  62      04  E1 001C8          BBC     #4, (R2), 31$               ;
                    06  62      05  E1 001CC          BBC     #5, (R2), 29$               ; 7235
                     00E4   C6  9F 001D0          PUSHAB  P.AEF                           ; 7237
                            04  11 001D4          BRB     30$                             ;
                     00EC   C6  9F 001D6 29$:     PUSHAB  P.AEG                           ; 7240
                        67      01  FB 001DA 30$:     CALLS   #1, DBG$PRINT               ;
                    11  62      06  E1 001DD 31$:     BBC     #6, (R2), 34$               ; 7247
                            62  95 001E1          TSTB    (R2)                            ; 7250
                            06  18 001E3          BGEQ    32$                             ;
                     00F6   C6  9F 001E5          PUSHAB  P.AEH                           ; 7252
                            04  11 001E9          BRB     33$                             ;
                     0100   C6  9F 001EB 32$:     PUSHAB  P.AEI                           ; 7255
                        67      01  FB 001EF 33$:     CALLS   #1, DBG$PRINT               ;
                    11  62      02  E1 001F2 34$:     BBC     #2, (R2), 37$               ; 7262
                    06  62      03  E1 001F6          BBC     #3, (R2), 35$               ; 7265
                     0108   C6  9F 001FA          PUSHAB  P.AEJ                           ; 7267
                            04  11 001FE          BRB     36$                             ;
                     010E   C6  9F 00200 35$:     PUSHAB  P.AEK                           ; 7270
                        67      01  FB 00204 36$:     CALLS   #1, DBG$PRINT               ;
                        05  02  A5  91 00207 37$:     CMPB    2(R5), #5                   ; 7281
                            07  12 0020B          BNEQ    38$                             ;
                        50  011C   C6  9E 0020D          MOVAB   P.AEM, R0               ; 7282
                            37  11 00212          BRB     43$                             ;
                        06  02  A5  91 00214 38$:     CMPB    2(R5), #6                   ; 7283
                            07  12 00218          BNEQ    39$                             ;
                        50  0123   C6  9E 0021A          MOVAB   P.AEN, R0               ; 7284
                            2A  11 0021F          BRB     43$                             ;
                        08  02  A5  91 00221 39$:     CMPB    2(R5), #8                   ; 7285
                            07  12 00225          BNEQ    40$                             ;
                        50  012D   C6  9E 00227          MOVAB   P.AEO, R0               ; 7286
                            1D  11 0022C          BRB     43$                             ;
                        09  02  A5  91 0022E 40$:     CMPB    2(R5), #9                   ; 7287
                            07  12 00232          BNEQ    41$                             ;
                        50  013A   C6  9E 00234          MOVAB   P.AEP, R0               ; 7288
                            10  11 00239          BRB     43$                             ;
                        07  02  A5  91 0023B 41$:     CMPB    2(R5), #7                   ; 7289
                            05  13 0023F          BEQL    42$                             ;
                        7E      01  CE 00241          MNEGL   #1, -(SP)                   ;
                            07  11 00244          BRB     44$                             ;
                        50  014A   C6  9E 00246 42$:     MOVAB   P.AEQ, R0               ; 7290
                            50  DD 0024B 43$:     PUSHL   R0                              ;
                     0114   C6  9F 0024D 44$:     PUSHAB  P.AEL                           ; 7278
                        67      02  FB 00251          CALLS   #2, DBG$PRINT               ;
                            0D  11 00254          BRB     47$                             ; 7147
                        02  01  A5  91 00256 45$:     CMPB    1(R5), #2                   ; 7299
                            07  12 0025A          BNEQ    47$                             ;
                     0150   C6  9F 0025C          PUSHAB  P.AER                           ; 7300
                        67      01  FB 00260 46$:     CALLS   #1, DBG$PRINT               ;
                        07  03  A5  E9 00263 47$:     BLBC    3(R5), 48$                  ; 7307
```

```
                 015E   C6  9F 00267          PUSHAB  P.AES                                    ;
                    67      01  FB 0026B          CALLS   #1, DBG$PRINT                          ;
          07        65      1A  E1 0026E 48$:     BBC     #26, (R5), 49$                         ; 7312
                 0168   C6  9F 00272          PUSHAB  P.AET                                   ;
                    67      01  FB 00276          CALLS   #1, DBG$PRINT                          ;
                    01   01  A5  91 00279 49$:     CMPB    1(R5), #1                              ; 7319
                            43  12 0027D          BNEQ    53$                                    ;
                         28  A4  D5 0027F          TSTL    40(R4)                                 ; 7320
                            3E  13 00282          BEQL    53$                                    ;
                    55      28  A4  D0 00284          MOVL    40(R4), OPCODE_LIST                    ; 7335
                    52          01  CE 00288          MNEGL   #1, COLUMN                             ; 7336
                                53  D4 0028B          CLRL    OPCODE                                 ; 7339
          29        65          53  E1 0028D 50$:     BBC     OPCODE, (OPCODE_LIST), 52$             ;
                    50      01  A2  9E 00291          MOVAB   1(R2), R0                              ; 7342
       52   50        03          00  EF 00295          EXTZV   #0, #3, R0, COLUMN                     ;
                                03  12 0029A          BNEQ    51$                                    ; 7343
                    68          00  FB 0029C          CALLS   #0, DBG$NEWLINE                        ;
                    50 00000000G00043  3C 0029F 51$:     MOVZWL  DBG$OPCODE_KIND_TABLE[OPCODE], INDEX   ; 7344
                    50          0A  C4 002A7          MULL2   #10, R0                                ; 7346
                       00000000G00040  9F 002AA          PUSHAB  DBG$OPCODE_NAME_TABLE[R0]              ;
                                06  DD 002B1          PUSHL   #6                                     ;
                         0175   C6  9F 002B3          PUSHAB  P.AEU                                  ; 7345
                    67          03  FB 002B7          CALLS   #3, DBG$PRINT                          ; 7346
          CB        53 000001FF   8F  F3 002BA 52$:     AOBLEQ  #511, OPCODE, 50$                      ; 7337
                    68          00  FB 002C2 53$:     CALLS   #0, DBG$NEWLINE                        ; 7358
                    01   1C  A4  D1 002C5          CMPL    28(R4), #1                             ; 7363
                            0D  13 002C9          BEQL    54$                                    ;
                         1C  A4  DD 002CB          PUSHL   28(R4)                                 ; 7366
                       017B   C6  9F 002CE          PUSHAB  P.AEV                                  ;
                    67          02  FB 002D2          CALLS   #2, DBG$PRINT                          ;
                    68          00  FB 002D5          CALLS   #0, DBG$NEWLINE                        ; 7367
                    20   20  A4  D5 002D8 54$:     TSTL    32(R4)                                 ; 7373
                            1A  13 002DB          BEQL    55$                                    ;
                    50      20  A4  D0 002DD          MOVL    32(R4), WHEN_ENTRY                     ; 7379
                    50      0C  A0  D0 002E1          MOVL    12(WHEN_ENTRY), STRING                 ; 7380
                         02  A0  9F 002E5          PUSHAB  2(STRING)                              ; 7381
                    7E          60  3C 002E8          MOVZWL  (STRING), -(SP)                        ;
                                6E  D7 002EB          DECL    (SP)                                   ;
                       018A   C6  9F 002ED          PUSHAB  P.AEW                                  ;
                    67          03  FB 002F1          CALLS   #3, DBG$PRINT                          ;
                    68          00  FB 002F4          CALLS   #0, DBG$NEWLINE                        ; 7382
                    24   24  A4  D5 002F7 55$:     TSTL    36(R4)                                 ; 7388
                            1A  13 002FA          BEQL    56$                                    ;
                    50      24  A4  D0 002FC          MOVL    36(R4), DO_LIST_ENTRY                  ; 7394
                    50      0C  A0  D0 00300          MOVL    12(DO_LIST_ENTRY), STRING              ; 7395
                         02  A0  9F 00304          PUSHAB  2(STRING)                              ; 7396
                    7E          60  3C 00307          MOVZWL  (STRING), -(SP)                        ;
                                6E  D7 0030A          DECL    (SP)                                   ;
                       0198   C6  9F 0030C          PUSHAB  P.AEX                                  ;
                    67          03  FB 00310          CALLS   #3, DBG$PRINT                          ;
                    68          00  FB 00313          CALLS   #0, DBG$NEWLINE                        ; 7397
                                04  00316 56$:     RET                                            ; 7400

; Routine Size:  791 bytes,    Routine Base:  DBG$CODE + 29E1
```

```
;  7294          7401  1 GLOBAL ROUTINE DELETE_EVENT_ENTRY(EVENT_ENTRY): NOVALUE =
;  7295          7402  1 !
;  7296          7403  1 ! FUNCTION
;  7297          7404  1 !       This routine is called to delete an event entry from its queue
;  7298          7405  1 !       (the command queue and event queue if linked in), as well as
;  7299          7406  1 !       any value descriptor, WHEN, or DO entries.
;  7300          7407  1 !
;  7301          7408  1 ! INPUTS
;  7302          7409  1 !       EVENT_ENTRY :           Pointer to the event entry to be deleted.
;  7303          7410  1 !
;  7304          7411  1 ! OUTPUTS
;  7305          7412  1 !       None
;  7306          7413  1 !
;  7307          7414  1
;  7308          7415  2     BEGIN
;  7309          7416  2
;  7310          7417  2     MAP
;  7311          7418  2         EVENT_ENTRY :       REF EVENT$EVENT_DESCRIPTOR;
;  7312          7419  2
;  7313          7420  2     LOCAL
;  7314          7421  2         WHEN_ENTRY :        REF EVENT$WHEN_DESCRIPTOR,      ! WHEN pointer
;  7315          7422  2         DO_LIST_ENTRY :     REF EVENT$DO_LIST_DESCRIPTOR,   ! DO List pointer
;  7316          7423  2
;  7317          7424  2         ADDRESS,                                            ! Release address
;  7318          7425  2         SYMID_LIST,
;  7319          7426  2         DUMMY;
;  7320          7427  2
;  7321          7428  2
;  7322          7429  2     ! *****SSI
;  7323          7430  2     ! We just had Reserved Operand fault from RET of System service.
;  7324          7431  2     ! It is time to take the entry off, erase what we have done, just
;  7325          7432  2     ! as if nothing ever happened.
;  7326          7433  2     !
;  7327          7434  2     IF .EVENT_ENTRY [EVENT$B_CMD_TYPE] EQL EVENT$K_TYPE_SSINT
;  7328          7435  2     THEN
;  7329          7436  3         BEGIN
;  7330          7437  3         LOCAL
;  7331          7438  3             BIT_15_CNT: REF VECTOR[,BYTE],
;  7332          7439  3             BIT_15_CNT_SSV: REF VECTOR[,BYTE],
;  7333          7440  3             USERS_FP: REF BLOCK [,BYTE];
;  7334          7441  3
;  7335          7442  3         BIT_15_CNT_SSV = .EVENT_ENTRY [EVENT$L_SSV_COUNT];
;  7336          7443  3         BIT_15_CNT = .EVENT_ENTRY [EVENT$L_FP_RET_CNT];
;  7337          7444  3
;  7338          7445  3
;  7339          7446  3         ! We have got reserved operand fault.
;  7340          7447  3         !
;  7341          7448  3         BIT_15_CNT[0] = .BIT_15_CNT[0] - 1;
;  7342          7449  3         USERS_FP = .EVENT_ENTRY [EVENT$L_USERS_FP];
;  7343          7450  3
;  7344          7451  3
;  7345          7452  3         ! This service is leaving.
;  7346          7453  3         !
;  7347          7454  3         IF .BIT_15_CNT[0] EQL 0
;  7348          7455  3         THEN
;  7349          7456  4             BEGIN
;  7350          7457  4
```

```
;  7351          7458  4
;  7352          7459  4              ! Get ready to report watched value at T-bit RET time.
;  7353          7460  4              !
;  7354          7461  4              IF .DBG$GB_SET_SSI_CNT THEN SKIP_WATCHES = TRUE;
;  7355          7462  4              (USERS_FP [SF$W_SAVE_PSW])<15,1,0> = FALSE;
;  7356          7463  4 ! Since we only have one entry on the event queue, so there is no need
;  7357          7464  4 ! to match the nested system calls.
;  7358          7465  4 !            BIT_15_CNT_SSV[0] = .BIT_15_CNT_SSV[0] - 1;
;  7359          7466  4
;  7360          7467  4              ! Just about to return to the caller.
;  7361          7468  4              !
;  7362          7469  4              BIT_15_CNT_SSV[0] = 0;
;  7363          7470  4
;  7364          7471  4              ! Cycle is all done.
;  7365          7472  4              !
;  7366          7473  4              DBG$GB_SET_WATCH_FLAG = FALSE;
;  7367          7474  4              END
;  7368          7475  4
;  7369          7476  3          ELSE
;  7370          7477  3
;  7371          7478  3
;  7372          7479  3              ! Still more left to go.  More levels to go through, for example,
;  7373          7480  3              ! SDBG sees it, next IDBG should see it.  Since we only make the
;  7374          7481  3              ! reserved operand fault goes through one level, this should never
;  7375          7482  3              ! happen.
;  7376          7483  3              !
;  7377          7484  3              (USERS_FP [SF$W_SAVE_PSW])<15,1,0> = TRUE;
;  7378          7485  2          END;
;  7379          7486  2
;  7380          7487  2
;  7381          7488  2      ! If this entry is a skips-event, remove it from its parent's queue
;  7382          7489  2      ! first.  If its NOT a skips, and the parent queue is not empty, we
;  7383          7490  2      ! have (at the moment) and error...  The parent still has active
;  7384          7491  2      ! offspring.
;  7385          7492  2      !
;  7386          7493  2      IF .EVENT_ENTRY [EVENT$B_CMD_TYPE] EQLU EVENT$K_TYPE_SKIPS OR
;  7387          7494  2         .EVENT_ENTRY [EVENT$B_CMD_TYPE] EQLU EVENT$K_TYPE_IGNOR OR
;  7388          7495  2         .EVENT_ENTRY [EVENT$B_CMD_TYPE] EQLU EVENT$K_TYPE_SSINT
;  7389          7496  2      THEN
;  7390          7497  2          REMQUE1 (.EVENT_ENTRY)
;  7391          7498  2
;  7392          7499  2      ELSE IF .EVENT_ENTRY [EVENT$L_EXC_FLINK] NEQA .EVENT_ENTRY OR
;  7393          7500  2              .EVENT_ENTRY [EVENT$L_EXC_BLINK] NEQA .EVENT_ENTRY
;  7394          7501  2      THEN
;  7395          7502  2          RETURN;
;  7396          7503  2
;  7397          7504  2
;  7398          7505  2      ! Remove the entry from the command queue.
;  7399          7506  2      !
;  7400          7507  2      REMQUE (.EVENT_ENTRY, EVENT_ENTRY);
;  7401          7508  2
;  7402          7509  2
;  7403          7510  2      ! If this is not a STEPS, SKIPS or IGNOR entry....
;  7404          7511  2      !
;  7405          7512  2      IF (.EVENT_ENTRY [EVENT$B_CMD_TYPE] NEQU EVENT$K_TYPE_STEPS) AND
;  7406          7513  2         (.EVENT_ENTRY [EVENT$B_CMD_TYPE] NEQU EVENT$K_TYPE_SKIPS) AND
;  7407          7514  2         (.EVENT_ENTRY [EVENT$B_CMD_TYPE] NEQU EVENT$K_TYPE_IGNOR) AND
```

```
;  7408          7515  3        (.EVENT_ENTRY [EVENT$B_CMD_TYPE] NEQU EVENT$K_TYPE_SSINT)
;  7409          7516  2    THEN
;  7410          7517  3        BEGIN
;  7411          7518  3
;  7412          7519  3
;  7413          7520  3        ! If the entry is an access type, release any primary
;  7414          7521  3        ! and value descriptor.
;  7415          7522  3        !
;  7416          7523  3        IF .EVENT_ENTRY [EVENT$B_CMD_KIND] EQLU EVENT$K_KIND_ACC
;  7417          7524  3        THEN
;  7418          7525  4            BEGIN
;  7419          7526  4
;  7420          7527  4
;  7421          7528  4            ! Release any page entries.
;  7422          7529  4            !
;  7423          7530  4            IF .EVENT_ENTRY [EVENT$B_SUB_KIND] EQLU EVENT$K_ACC_MDFY
;  7424          7531  4            THEN
;  7425          7532  5                BEGIN
;  7426          7533  5                LOCAL
;  7427          7534  5                    PAGE_LIST : REF VECTOR [, LONG];
;  7428          7535  5
;  7429          7536  5
;  7430          7537  5                ! Get the pages associated with this value
;  7431          7538  5                !
;  7432          7539  5                IF DBG$NGET_PAGES (.EVENT_ENTRY [EVENT$L_PRIMARY],
;  7433          7540  5                                   PAGE_LIST,
;  7434          7541  5                                   DUMMY
;  7435          7542  5                                  )
;  7436          7543  5    THEN
;  7437          7544  6        BEGIN
;  7438          7545  6
;  7439          7546  6
;  7440          7547  6            ! While there are entries in the page list, delete a
;  7441          7548  6            ! page reference from the page queue.
;  7442          7549  6            !
;  7443          7550  6            DO
;  7444          7551  7                BEGIN
;  7445          7552  7                LOCAL
;  7446          7553  7                    PAGE_ENTRY :    REF EVENT$PAGE_DESCRIPTOR;
;  7447          7554  7
;  7448          7555  7
;  7449          7556  7                ! Search through the existing entries in the page
;  7450          7557  7                ! queue for this page.
;  7451          7558  7                !
;  7452          7559  7                PAGE_ENTRY = .EVENT$PAGE_QUEUE [L_QUEUE_FLINK];
;  7453          7560  7                WHILE .PAGE_ENTRY NEQA EVENT$PAGE_QUEUE DO
;  7454          7561  8                    BEGIN
;  7455          7562  8                    IF .PAGE_ENTRY [EVENT$L_PAGE_ADDRESS] EQLA
;  7456          7563  8                        .PAGE_LIST [1]
;  7457          7564  8                    THEN
;  7458          7565  8
;  7459          7566  8
;  7460          7567  8                        ! A match is found, so de-bump the
;  7461          7568  8                        ! reference count, deleting the entry if
;  7462          7569  8                        ! the count goes to zero.
;  7463          7570  8                        !
;  7464          7571  9                        BEGIN
```

```
;  7465          7572  9                        PAGE_ENTRY [EVENT$W_PAGE_REF_COUNT] =
;  7466          7573  9                            .PAGE_ENTRY [EVENT$W_PAGE_REF_COUNT] - 1;
;  7467          7574  9                        IF .PAGE_ENTRY [EVENT$W_PAGE_REF_COUNT] EQLU 0
;  7468          7575  9                        THEN
;  7469          7576 10                            BEGIN
;  7470          7577 10                            REMQUE (.PAGE_ENTRY, PAGE_ENTRY);
;  7471          7578 10                            DBG$REL_MEMORY (.PAGE_ENTRY);
;  7472          7579 10                            EXITLOOP;
;  7473          7580  9                            END;
;  7474          7581  9
;  7475          7582  8                        END;
;  7476          7583  8
;  7477          7584  8
;  7478          7585  8                    ! Not found yet, point to the next one.
;  7479          7586  8                    !
;  7480          7587  8                    PAGE_ENTRY = .PAGE_ENTRY [EVENT$L_PAGE_FLINK];
;  7481          7588  7                    END;
;  7482          7589  7
;  7483          7590  7                PAGE_LIST = .PAGE_LIST [0];
;  7484          7591  7                END
;  7485          7592  6            WHILE .PAGE_LIST;
;  7486          7593  5            END;
;  7487          7594  4        END;
;  7488          7595  4
;  7489          7596  4
;  7490          7597  4    ! Notify the RST to release symid's.
;  7491          7598  4    !
;  7492          7599  4    IF DBG$NGET_SYMID (.EVENT_ENTRY [EVENT$L_PRIMARY],
;  7493          7600  4                       SYMID_LIST,
;  7494          7601  4                       DUMMY
;  7495          7602  4                      )
;  7496          7603  4    THEN
;  7497          7604  4        DBG$STA_UNLOCK_SYMID (.SYMID_LIST);
;  7498          7605  4
;  7499          7606  4
;  7500          7607  4    ! Release the primary descriptor
;  7501          7608  4    !
;  7502          7609  4    DBG$NFREE_DESC (.EVENT_ENTRY [EVENT$L_PRIMARY], DUMMY);
;  7503          7610  4
;  7504          7611  4
;  7505          7612  4    ! Release any value descriptor.
;  7506          7613  4    !
;  7507          7614  4    IF .EVENT_ENTRY [EVENT$V_HAS_VAL_DSCR]
;  7508          7615  4    THEN
;  7509          7616  5        BEGIN
;  7510          7617  5
;  7511          7618  5
;  7512          7619  5        ! Notify the RST to release symid's.
;  7513          7620  5        !
;  7514          7621  5        IF DBG$NGET_SYMID (.EVENT_ENTRY [EVENT$L_VALDESC],
;  7515          7622  5                           SYMID_LIST,
;  7516          7623  5                           DUMMY
;  7517          7624  5                          )
;  7518          7625  5        THEN
;  7519          7626  5            DBG$STA_UNLOCK_SYMID (.SYMID_LIST);
;  7520          7627  5
;  7521          7628  5
```

```
;  7522          7629  5                ! Release the value descriptor
;  7523          7630  5                !
;  7524          7631  5                DBG$NFREE_DESC (.EVENT_ENTRY [EVENT$L_VALDESC], DUMMY);
;  7525          7632  4                END;
;  7526          7633  3            END;
;  7527          7634  3
;  7528          7635  3
;  7529          7636  3        ! Release any WHEN Entries.
;  7530          7637  3        !
;  7531          7638  3        WHEN_ENTRY = .EVENT_ENTRY [EVENT$L_WHEN];
;  7532          7639  3        IF .WHEN_ENTRY NEQA 0
;  7533          7640  3        THEN
;  7534          7641  4            BEGIN
;  7535          7642  4
;  7536          7643  4
;  7537          7644  4            ! We have a WHEN entry.  Decrement its reference count.
;  7538          7645  4            !
;  7539          7646  4            WHEN_ENTRY [EVENT$L_WHEN_COUNT] =
;  7540          7647  4                .WHEN_ENTRY [EVENT$L_WHEN_COUNT] - 1;
;  7541          7648  4
;  7542          7649  4
;  7543          7650  4            ! Delete it if the count goes to 0 (or less !!!).
;  7544          7651  4            !
;  7545          7652  4            IF .WHEN_ENTRY [EVENT$L_WHEN_COUNT] LEQU 0
;  7546          7653  4            THEN
;  7547          7654  5                BEGIN
;  7548          7655  5
;  7549          7656  5
;  7550          7657  5                ! Release the expression buffer.
;  7551          7658  5                !
;  7552          7659  5                DBG$REL_MEMORY (.WHEN_ENTRY [EVENT$L_WHEN_POINT]);
;  7553          7660  5
;  7554          7661  5
;  7555          7662  5                ! Release the WHEN descriptor.
;  7556          7663  5                !
;  7557          7664  5                DBG$REL_MEMORY (.WHEN_ENTRY);
;  7558          7665  5                END
;  7559          7666  3            END;
;  7560          7667  3
;  7561          7668  3
;  7562          7669  3        ! Release any DO List Entries.
;  7563          7670  3        !
;  7564          7671  3        DO_LIST_ENTRY = .EVENT_ENTRY [EVENT$L_DO];
;  7565          7672  3        IF .DO_LIST_ENTRY NEQA 0
;  7566          7673  3        THEN
;  7567          7674  4            BEGIN
;  7568          7675  4
;  7569          7676  4
;  7570          7677  4            ! We have a DO List entry.  Decrement its reference count.
;  7571          7678  4            !
;  7572          7679  4            DO_LIST_ENTRY [EVENT$L_DO_LIST_COUNT] =
;  7573          7680  4                .DO_LIST_ENTRY [EVENT$L_DO_LIST_COUNT] - 1;
;  7574          7681  4
;  7575          7682  4
;  7576          7683  4            ! Delete it if the count goes to 0 (or less !!!).
;  7577          7684  4            !
;  7578          7685  4            IF .DO_LIST_ENTRY [EVENT$L_DO_LIST_COUNT] LEQU 0
```

```
;  7579     7686  4              THEN
;  7580     7687  5                  BEGIN
;  7581     7688  5      !           LOCAL
;  7582     7689  5      !               PREV_ENTRY: REF EVENT$DO_LIST_DESCRIPTOR,
;  7583     7690  5      !               NEXT_ENTRY: REF EVENT$DO_LIST_DESCRIPTOR;
;  7584     7691  5
;  7585     7692  5
;  7586     7693  5                  ! Release the command buffer.
;  7587     7694  5                  !
;  7588     7695  5                  DBG$REL_MEMORY (.DO_LIST_ENTRY [EVENT$L_DO_LIST_POINT]);
;  7589     7696  5
;  7590     7697  5
;  7591     7698  5                  ! Unlink this DO_LIST entry from the list. The REMQUE
;  7592     7699  5                  ! instruction does the same as the following four lines
;  7593     7700  5                  ! (I hope).
;  7594     7701  5                  !
;  7595     7702  5                  ! PREV_ENTRY = .DO_LIST_ENTRY [EVENT$L_DO_LIST_BLINK];
;  7596     7703  5                  ! NEXT_ENTRY = .DO_LIST_ENTRY [EVENT$L_DO_LIST_FLINK];
;  7597     7704  5                  ! PREV_ENTRY [EVENT$L_DO_LIST_FLINK] = .NEXT_ENTRY;
;  7598     7705  5                  ! NEXT_ENTRY [EVENT$L_DO_LIST_BLINK] = .PREV_ENTRY;
;  7599     7706  5                  !
;  7600     7707  5                  REMQUE (.DO_LIST_ENTRY, DO_LIST_ENTRY);
;  7601     7708  5
;  7602     7709  5
;  7603     7710  5                  ! Release the DO_LIST descriptor.
;  7604     7711  5                  !
;  7605     7712  5                  DBG$REL_MEMORY (.DO_LIST_ENTRY);
;  7606     7713  4                  END;
;  7607     7714  3              END;
;  7608     7715  2          END;
;  7609     7716  2
;  7610     7717  2
;  7611     7718  2      ! Release the opcode list.
;  7612     7719  2      !
;  7613     7720  2      IF (.EVENT_ENTRY [EVENT$B_CMD_KIND] EQLU EVENT$K_KIND_INS) AND
;  7614     7721  2         (.EVENT_ENTRY [EVENT$L_OPCODE_LIST] NEQA 0) AND
;  7615     7722  2         (.EVENT_ENTRY [EVENT$L_OPCODE_LIST] NEQA DBG$OPCODES_CALL) AND
;  7616     7723  3         (.EVENT_ENTRY [EVENT$L_OPCODE_LIST] NEQA DBG$OPCODES_BRANCH)
;  7617     7724  2      THEN
;  7618     7725  2          DBG$REL_MEMORY (.EVENT_ENTRY [EVENT$L_OPCODE_LIST]);
;  7619     7726  2
;  7620     7727  2
;  7621     7728  2      ! Release Copied FP.
;  7622     7729  2      !
;  7623     7730  2      IF .EVENT_ENTRY [EVENT$B_CMD_TYPE] EQLU EVENT$K_TYPE_SKIPS OR
;  7624     7731  2         .EVENT_ENTRY [EVENT$B_CMD_TYPE] EQLU EVENT$K_TYPE_STEPS
;  7625     7732  2      THEN
;  7626     7733  2          IF .EVENT_ENTRY [EVENT$L_CALL_FRAME] NEQA 0
;  7627     7734  2          THEN
;  7628     7735  2              DBG$REL_MEMORY (.EVENT_ENTRY [EVENT$L_CALL_FRAME]);
;  7629     7736  2
;  7630     7737  2
;  7631     7738  2      ! Finally, release the Event Entry, itself.
;  7632     7739  2      !
;  7633     7740  2      DBG$REL_MEMORY (.EVENT_ENTRY);
;  7634     7741  1      END;
```

```
                                07FC 00000          .ENTRY  DELETE_EVENT_ENTRY, Save R2,R3,R4,R5,R6,R7,-  ; 7401
                                                            R8,R9,R10                                       ;
                5A 00000000G    00   9E 00002        MOVAB   DBG$NFREE_DESC, R10                             ;
                59 00000000G    00   9E 00009        MOVAB   DBG$STA_UNLOCK_SYMID, R9                        ;
                58 00000000G    00   9E 00010        MOVAB   DBG$NGET_SYMID, R8                              ;
                57 00000000'    EF   9E 00017        MOVAB   EVENT$PAGE_QUEUE, R7                            ;
                56 00000000'    EF   9E 0001E        MOVAB   SKIP_WATCHES, R6                                ;
                55 00000000G    00   9E 00025        MOVAB   DBG$REL_MEMORY, R5                              ;
                5E                   0C   C2 0002C        SUBL2   #12, SP                                    ;
                52         04        AC   D0 0002F        MOVL    EVENT_ENTRY, R2                            ; 7434
                                     54   D4 00033        CLRL    R4                                         ;
                06         14        A2   91 00035        CMPB    20(R2), #6                                 ;
                                     2F   12 00039        BNEQ    3$                                         ;
                                     54   D6 0003B        INCL    R4                                         ;
                53         1C        A2   D0 0003D        MOVL    28(R2), BIT_15_CNT_SSV                     ; 7442
                51         2C        A2   D0 00041        MOVL    44(R2), BIT_15_CNT                         ; 7443
                                     61   97 00045        DECB    (BIT_15_CNT)                               ; 7448
                50         24        A2   D0 00047        MOVL    36(R2), USERS_FP                           ; 7449
                                     61   95 0004B        TSTB    (BIT_15_CNT)                               ; 7454
                                     16   12 0004D        BNEQ    2$                                         ;
                03 00000000G    00   E9 0004F        BLBC    DBG$GB_SET_SSI_CNT, 1$                         ; 7461
                66                   01   D0 00056        MOVL    #1, SKIP_WATCHES                           ;
          05    A0         80   8F   8A 00059 1$:     BICB2   #128, 5(USERS_FP)                          ; 7462
                                     63   94 0005E        CLRB    (BIT_15_CNT_SSV)                           ; 7469
                           CD   A7   94 00060        CLRB    DBG$GB_SET_WATCH_FLAG                      ; 7473
                                     05   11 00063        BRB     3$                                         ; 7454
          05    A0         80   8F   88 00065 2$:     BISB2   #128, 5(USERS_FP)                          ; 7484
                04         14   A2   91 0006A 3$:     CMPB    20(R2), #4                                 ; 7493
                                     09   13 0006E        BEQL    4$                                         ;
                05         14   A2   91 00070        CMPB    20(R2), #5                                 ; 7494
                                     03   13 00074        BEQL    4$                                         ;
                09                   54   F9 00076        BLBC    R4, 5$                                     ; 7495
                                     52   DD 00079 4$:     PUSHL   R2                                         ; 7497
          FB86  CF                   01   FB 0007B        CALLS   #1, REMQUE1                                ;
                                     0D   11 00080        BRB     7$                                         ;
                52         08        A2   D1 00082 5$:     CMPL    8(R2), R2                                  ; 7499
                                     04   12 00086        BNEQ    6$                                         ;
                52         0C        A2   D1 00088        CMPL    12(R2), R2                                 ; 7500
                                     01   13 0008C 6$:     BEQL    7$                                         ;
                                     04   0008E        RET                                                ;
          04    AC                   62   0F 0008F 7$:     REMQUE  (R2), EVENT_ENTRY                          ; 7507
                50         04        AC   D0 00093        MOVL    EVENT_ENTRY, R0                            ; 7512
                03         14        A0   91 00097        CMPB    20(R0), #3                                 ;
                                     10   13 0009B        BEQL    8$                                         ;
                04         14        A0   91 0009D        CMPB    20(R0), #4                                 ; 7513
                                     0A   13 000A1        BEQL    8$                                         ;
                05         14        A0   91 000A3        CMPB    20(R0), #5                                 ; 7514
                                     04   13 000A7        BEQL    8$                                         ;
                06         14        A0   91 000A9        CMPB    20(R0), #6                                 ; 7515
                                     03   12 000AD 8$:     BNEQ    9$                                         ;
                                00C7 31   000AF        BRW     20$                                        ;
                           15        A0   95 000B2 9$:     TSTB    21(R0)                                     ; 7523
                                     03   13 000B5        BEQL    10$                                        ;
```

```
                                008C  31 000B7         BRW     18$                                             ;
                          02      16  A0  91 000BA 10$:  CMPB    22(R0), #2                                      ; 7530
                                      41  12 000BE         BNEQ    15$                                             ;
                                  08  AE  9F 000C0         PUSHAB  DUMMY                                           ; 7539
                                  04  AE  9F 000C3         PUSHAB  PAGE_LIST                                       ;
                                  28  A0  DD 000C6         PUSHL   40(R0)                                          ;
                  00000000G       00      03  FB 000C9         CALLS   #3, DBG$NGET_PAGES                              ;
                                  2E      50  E9 000D0         BLBC    R0, 15$                                         ;
                                  52      67  D0 000D3 11$:  MOVL    EVENT$PAGE_QUEUE, PAGE_ENTRY                    ; 7559
                                  50      67  9E 000D6 12$:  MOVAB   EVENT$PAGE_QUEUE, R0                           ; 7560
                                  50      52  D1 000D9         CMPL    PAGE_ENTRY, R0                                  ;
                                          1E  13 000DC         BEQL    14$                                             ;
                                  50      6E  D0 000DE         MOVL    PAGE_LIST, R0                                   ; 7563
                              04  A0      08  A2  D1 000E1         CMPL    8(PAGE_ENTRY), 4(R0)                            ;
                                          0F  12 000E6         BNEQ    13$                                             ;
                                      0C  A2  B7 000E8         DECW    12(PAGE_ENTRY)                                  ; 7573
                                          0A  12 000EB         BNEQ    13$                                             ; 7574
                                  52      62  0F 000ED         REMQUE  (PAGE_ENTRY), PAGE_ENTRY                        ; 7577
                                  52      DD  000F0         PUSHL   PAGE_ENTRY                                      ; 7578
                                  65      01  FB 000F2         CALLS   #1, DBG$REL_MEMORY                              ;
                                          05  11 000F5         BRB     14$                                             ; 7576
                                  52      62  D0 000F7 13$:  MOVL    (PAGE_ENTRY), PAGE_ENTRY                        ; 7587
                                          DA  11 000FA         BRB     12$                                             ; 7560
                                          9E  DD 000FC 14$:  PUSHL   @PAGE_LIST                                      ; 7590
                                  D2      6E  E8 000FE         BLBS    PAGE_LIST, 11$                                  ; 7592
                                  08  AE  9F 00101 15$:  PUSHAB  DUMMY                                           ; 7599
                                  08  AE  9F 00104         PUSHAB  SYMID_LIST                                      ;
                                  52  04  AC  D0 00107         MOVL    EVENT_ENTRY, R2                                 ;
                                  28  A2  DD 0010B         PUSHL   40(R2)                                          ;
                                  68      03  FB 0010E         CALLS   #3, DBG$NGET_SYMID                              ;
                                  06      50  E9 00111         BLBC    R0, 16$                                         ;
                                  04  AE  DD 00114         PUSHL   SYMID_LIST                                      ; 7604
                                  69      01  FB 00117         CALLS   #1, DBG$STA_UNLOCK_SYMID                        ;
                                  08  AE  9F 0011A 16$:  PUSHAB  DUMMY                                           ; 7609
                                  28  A2  DD 0011D         PUSHL   40(R2)                                          ;
                                  6A      02  FB 00120         CALLS   #2, DBG$NFREE_DESC                              ;
                      1E      17  A2      03  E1 00123         BBC     #3, 23(R2), 18$                                 ; 7614
                                  08  AE  9F 00128         PUSHAB  DUMMY                                           ; 7621
                                  08  AE  9F 0012B         PUSHAB  SYMID_LIST                                      ;
                                  30  A2  DD 0012E         PUSHL   48(R2)                                          ;
                                  68      03  FB 00131         CALLS   #3, DBG$NGET_SYMID                              ;
                                  06      50  E9 00134         BLBC    R0, 17$                                         ;
                                  04  AE  DD 00137         PUSHL   SYMID_LIST                                      ; 7626
                                  69      01  FB 0013A         CALLS   #1, DBG$STA_UNLOCK_SYMID                        ;
                                  08  AE  9F 0013D 17$:  PUSHAB  DUMMY                                           ; 7631
                                  30  A2  DD 00140         PUSHL   48(R2)                                          ;
                                  6A      02  FB 00143         CALLS   #2, DBG$NFREE_DESC                              ;
                                  53  04  AC  D0 00146 18$:  MOVL    EVENT_ENTRY, R3                                 ; 7638
                                  52  20  A3  D0 0014A         MOVL    32(R3), WHEN_ENTRY                              ;
                                          10  13 0014E         BEQL    19$                                             ; 7639
                                  08  A2  D7 00150         DECL    8(WHEN_ENTRY)                                   ; 7647
                                          0B  12 00153         BNEQ    19$                                             ; 7652
                                  0C  A2  DD 00155         PUSHL   12(WHEN_ENTRY)                                  ; 7659
                                  65      01  FB 00158         CALLS   #1, DBG$REL_MEMORY                              ;
                                          52  DD 0015B         PUSHL   WHEN_ENTRY                                      ; 7664
                                  65      01  FB 0015D         CALLS   #1, DBG$REL_MEMORY                              ;
                                  52  24  A3  D0 00160 19$:  MOVL    36(R3), DO_LIST_ENTRY                           ; 7671
```

```
                         13  13 00164          BEQL    20$                                     ; 7672
                      08 A2  D7 00166          DECL    8(DO_LIST_ENTRY)                        ; 7680
                         0E  12 00169          BNEQ    20$                                     ; 7685
                      0C A2  DD 0016B          PUSHL   12(DO_LIST_ENTRY)                       ; 7695
                   65    01  FB 0016E          CALLS   #1, DBG$REL_MEMORY                      ;
                   52       62 0F 00171       REMQUE  (DO_LIST_ENTRY), DO_LIST_ENTRY          ; 7707
                            52 DD 00174       PUSHL   DO_LIST_ENTRY                           ; 7712
                   65       01 FB 00176       CALLS   #1, DBG$REL_MEMORY                      ;
                   52    04 AC  D0 00179 20$: MOVL    EVENT_ENTRY, R2                         ; 7720
                   01    15 A2  91 0017D      CMPB    21(R2), #1                              ;
                            21  12 00181      BNEQ    21$                                     ;
                      28 A2  D5 00183          TSTL    40(R2)                                  ; 7721
                         1C  13 00186          BEQL    21$                                     ;
                   50 0088 C6  9E 00188       MOVAB   DBG$OPCODES_CALL, R0                    ; 7722
                   50    28 A2  D1 0018D      CMPL    40(R2), R0                              ;
                            11  13 00191      BEQL    21$                                     ;
                   50 00C8 C6  9E 00193       MOVAB   DBG$OPCODES_BRANCH, R0                  ; 7723
                   50    28 A2  D1 00198      CMPL    40(R2), R0                              ;
                            06  13 0019C      BEQL    21$                                     ;
                      28 A2  DD 0019E          PUSHL   40(R2)                                  ; 7725
                   65       01 FB 001A1       CALLS   #1, DBG$REL_MEMORY                      ;
                   04    14 A2  91 001A4 21$: CMPB    20(R2), #4                              ; 7730
                            06  13 001A8      BEQL    22$                                     ;
                   03    14 A2  91 001AA      CMPB    20(R2), #3                              ; 7731
                            0B  12 001AE      BNEQ    23$                                     ;
                      3C A2  D5 001B0 22$: TSTL    60(R2)                                  ; 7733
                            06  13 001B3      BEQL    23$                                     ;
                      3C A2  DD 001B5          PUSHL   60(R2)                                  ; 7735
                   65       01 FB 001B8       CALLS   #1, DBG$REL_MEMORY                      ;
                            52 DD 001BB 23$:    PUSHL   R2                                   ; 7740
                   65       01 FB 001BD       CALLS   #1, DBG$REL_MEMORY                      ;
                               04 001C0       RET                                             ; 7741

; Routine Size:  449 bytes,    Routine Base:  DBG$CODE + 2CF8
```

```
;  7636          7742  1 ROUTINE COMPARE_VMSDESC(DESC1, DESC2) =
;  7637          7743  1 !
;  7638          7744  1 ! FUNCTION
;  7639          7745  1 !       Determines whether two VMS descriptors represent the same area
;  7640          7746  1 !       of storage. This is used, for example, in processing the SET WATCH
;  7641          7747  1 !       command, to determine whether we already have a watchpoint on
;  7642          7748  1 !       the given data item.
;  7643          7749  1 !
;  7644          7750  1 ! INPUTS
;  7645          7751  1 !       DESC1 -         Points to a VMS descriptor
;  7646          7752  1 !       DESC2 -         Points to a VMS descriptor
;  7647          7753  1 !
;  7648          7754  1 ! OUTPUTS
;  7649          7755  1 !       The value TRUE or FALSE is returned.
;  7650          7756  1 !
;  7651          7757  2     BEGIN
;  7652          7758  2     MAP
;  7653          7759  2         DESC1: REF DBG$STG_DESC,
;  7654          7760  2         DESC2: REF DBG$STG_DESC;
;  7655          7761  2
;  7656          7762  2     LOCAL
;  7657          7763  2         LENGTH1,
;  7658          7764  2         LENGTH2,
;  7659          7765  2         OFFSET1,
;  7660          7766  2         OFFSET2;
;  7661          7767  2
;  7662          7768  2     ! Check whether the data given by the descriptors have
;  7663          7769  2     ! the same address.
;  7664          7770  2     !
;  7665          7771  2
;  7666          7772  2     IF .DESC1[DSC$B_CLASS] EQL DSC$K_CLASS_UBS
;  7667          7773  2     THEN OFFSET1 = .DESC1[DSC$L_POS] ELSE OFFSET1 = 0;
;  7668          7774  2
;  7669          7775  2     IF .DESC2[DSC$B_CLASS] EQL DSC$K_CLASS_UBS
;  7670          7776  2     THEN OFFSET2 = .DESC2[DSC$L_POS] ELSE OFFSET2 = 0;
;  7671          7777  2
;  7672          7778  2     IF (.DESC1[DSC$A_POINTER] + .OFFSET1<3,29,1>) NEQ
;  7673          7779  2        (.DESC2[DSC$A_POINTER] + .OFFSET2<3,29,1>)THEN RETURN FALSE;
;  7674          7780  2
;  7675          7781  2     IF .OFFSET1<0,3,0> NEQ .OFFSET2<0,3,0> THEN RETURN FALSE;
;  7676          7782  2
;  7677          7783  2     ! Compare the lengths.
;  7678          7784  2     ! (Do we really want to do this? The implications are:
;  7679          7785  2     !
;  7680          7786  2     ! SET WATCH ARRAY and SET WATCH ARRAY(1) are two different watchpoints,
;  7681          7787  2     ! since the watched areas have different lengths. This behavior seems
;  7682          7788  2     ! to be correct.
;  7683          7789  2     !
;  7684          7790  2     ! Say X is a byte variable at address 200. Say the default type is LONG.
;  7685          7791  2     ! Then SET WATCH X and SET WATCH 200 will be treated as two different
;  7686          7792  2     ! watchpoints (since one has length 1 and the other has length 4).
;  7687          7793  2     ! This does not seem to be a good thing. This problem could be solved
;  7688          7794  2     ! if we attempted to symbolize the "200" before setting the watchpoint
;  7689          7795  2     ! on it.)
;  7690          7796  2     !
;  7691          7797  2     LENGTH1 = DBG$DATA_LENGTH(.DESC1);
;  7692          7798  2     LENGTH2 = DBG$DATA_LENGTH(.DESC2);
```

```
;  7693          7799  2     RETURN .LENGTH1 EQL .LENGTH2;
;  7694          7800  1     END;


                                        007C 00000 COMPARE_VMSDESC:
                                                   .WORD   Save R2,R3,R4,R5,R6                 ;  7742
                    56 00000000G   00   9E 00002           MOVAB   DBG$DATA_LENGTH, R6
                    51         04  AC   D0 00009           MOVL    DESC1, R1                   ;  7772
                    0D         03  A1   91 0000D           CMPB    3(R1), #13
                                   06   12 00011           BNEQ    1$
                    55         08  A1   D0 00013           MOVL    8(R1), OFFSET1              ;  7773
                                   02   11 00017           BRB     2$
                                   55   D4 00019 1$:       CLRL    OFFSET1
                    52         08  AC   D0 0001B 2$:       MOVL    DESC2, R2                   ;  7775
                    0D         03  A2   91 0001F           CMPB    3(R2), #13
                                   06   12 00023           BNEQ    3$
                    54         08  A2   D0 00025           MOVL    8(R2), OFFSET2              ;  7776
                                   02   11 00029           BRB     4$
                                   54   D4 0002B 3$:       CLRL    OFFSET2
          53        55         FD  8F   78 0002D 4$:       ASHL    #-3, OFFSET1, R3            ;  7778
                    53         04  A1   C0 00032           ADDL2   4(R1), R3
          50        54         FD  8F   78 00036           ASHL    #-3, OFFSET2, R0            ;  7779
                    50         04  A2   C0 0003B           ADDL2   4(R2), R0
                    50             53   D1 0003F           CMPL    R3, R0
                                   23   12 00042           BNEQ    6$
          50        54             55   8D 00044           XORB3   OFFSET1, OFFSET2, R0        ;  7781
                    07             50   93 00048           BITB    R0, #7
                                   1A   12 0004B           BNEQ    6$
                                   51   DD 0004D           PUSHL   R1                          ;  7797
                    66             01   FB 0004F           CALLS   #1, DBG$DATA_LENGTH
                    53             50   D0 00052           MOVL    R0, LENGTH1
                                   52   DD 00055           PUSHL   R2                          ;  7798
                    66             01   FB 00057           CALLS   #1, DBG$DATA_LENGTH
                                   51   D4 0005A           CLRL    R1                          ;  7799
                    50             53   D1 0005C           CMPL    LENGTH1, LENGTH2
                                   02   12 0005F           BNEQ    5$
                                   51   D6 00061           INCL    R1
                    50             51   D0 00063 5$:       MOVL    R1, R0
                                        04 00066           RET
                                   50   D4 00067 6$:       CLRL    R0                          ;  7800
                                        04 00069           RET

; Routine Size:  106 bytes,    Routine Base:  DBG$CODE + 2EB9

;  7695          7801  1
```

```
;  7697          7802  1 ROUTINE GET_WATCH_POINT_VALUE (EVENT : REF EVENT$EVENT_DESCRIPTOR): NOVALUE =
;  7698          7803  1 !
;  7699          7804  1 ! FUNCTION
;  7700          7805  1 !
;  7701          7806  1 !       This routine gets the new value for a variable that is watched.
;  7702          7807  1 !       It does so by converting the Primary in the Event Entry to a
;  7703          7808  1 !       Value Descriptor which contains the value.
;  7704          7809  1 !
;  7705          7810  1 !       Along the way, this routine checks that the Primary is still
;  7706          7811  1 !       valid (i.e., still points to the same storage that it did when
;  7707          7812  1 !       the watchpoint was set). If it is not valid, the Primary is
;  7708          7813  1 !       replaced by a Volatile Value Descriptor, and then the watchpoint
;  7709          7814  1 !       is on an absolute address instead of a primary expression.
;  7710          7815  1 !
;  7711          7816  1 ! INPUTS
;  7712          7817  1 !       EVENT   - Event entry pointer which describes the watchpoint.
;  7713          7818  1 !
;  7714          7819  1 ! OUTPUTS
;  7715          7820  1 !       The own variable NEWVALUE is set by this routine. The value in
;  7716          7821  1 !       NEWVALUE is then compared to the value in EVENT[EVENT$L_VALDESC]
;  7717          7822  1 !       to see if the watched variable has changed (this comparison
;  7718          7823  1 !       is done in DBG$EXCEPTION_HANDLER, the called of this routine).
;  7719          7824  1 !
;  7720          7825  2     BEGIN
;  7721          7826  2     LOCAL
;  7722          7827  2         DUMMY,                          ! Output parameter for subroutines
;  7723          7828  2         PRIMARY,                        ! Temporary copy of the Primary
;  7724          7829  2         SYMID_LIST,                     ! Symid list for LOCK_SYMID
;  7725          7830  2         VALDESC: REF DBG$VALDESC,       ! Value descriptor with value of Primary
;  7726          7831  2         V_VALDESC: REF DBG$VALDESC;     ! Volatile Value Descriptor
;  7727          7832  2
;  7728          7833  2
;  7729          7834  2     ! Copy the Primary since PRIM_TO_VAL sometimes has the side effect
;  7730          7835  2     ! of modifying its argument. This copy is done into temporary
;  7731          7836  2     ! memory (fourth parameter is FALSE). Then call PRIM_TO_VAL
;  7732          7837  2     ! and get a Volatile Value Descriptor (this will have
;  7733          7838  2     ! the real address of the watched variable embedded in it).
;  7734          7839  2     !
;  7735          7840  2     DBG$NCOPY_DESC (.EVENT[EVENT$L_PRIMARY], PRIMARY, DUMMY, FALSE);
;  7736          7841  2     INVALID_FLAG = FALSE;
;  7737          7842  2     PRIM_TO_VAL (.PRIMARY, DBG$K_V_VALUE_DESC, V_VALDESC);
;  7738          7843  2
;  7739          7844  2
;  7740          7845  2     ! Check whether the Primary is still valid, i.e., whether it still
;  7741          7846  2     ! points to the same storage as it did when the watchpoint was set.
;  7742          7847  2     !
;  7743          7848  2     IF .INVALID_FLAG OR
;  7744          7849  2        CH$NEQ (T2, V_VALDESC[DBG$A_VALUE_VMSDESC], 12, EVENT[EVENT$A_VMSDESC])
;  7745          7850  2     THEN
;  7746          7851  3         BEGIN
;  7747          7852  3
;  7748          7853  3
;  7749          7854  3         ! Print an informational saying the Primary is no longer valid.
;  7750          7855  3         !
;  7751          7856  3         DBG$PRINT ($AC ('%DEBUG-I-WATCHVAR, watched variable '));
;  7752          7857  3         DBG$PRINT_IDENTIFIER(.EVENT[EVENT$L_PRIMARY]);
;  7753          7858  3         IF .INVALID_FLAG
```

```
;  7754          7859  3          THEN
;  7755          7860  3              DBG$PRINT ($AC (' has gone out of scope'))
;  7756          7861  3          ELSE
;  7757          7862  3              DBG$PRINT ($AC (' now points to a different address'));
;  7758          7863  3          DBG$NEWLINE();
;  7759          7864  3
;  7760          7865  3
;  7761          7866  3          ! Free up the old Primary.
;  7762          7867  3          !
;  7763          7868  3          IF DBG$NGET_SYMID (.EVENT[EVENT$L_PRIMARY], SYMID_LIST, DUMMY)
;  7764          7869  3          THEN
;  7765          7870  3              DBG$STA_UNLOCK_SYMID (.SYMID_LIST);
;  7766          7871  3          DBG$NFREE_DESC (.EVENT[EVENT$L_PRIMARY], DUMMY);
;  7767          7872  3
;  7768          7873  3
;  7769          7874  3          ! Replace it with the Volatile Value Descriptor.
;  7770          7875  3          !
;  7771          7876  3          V_VALDESC = DBG$MAKE_VAL_DESC(EVENT[EVENT$A_VMSDESC], DBG$K_V_VALUE_DESC);
;  7772          7877  3          V_VALDESC[DBG$B_DHDR_LANG] = .DBG$GB_LANGUAGE;
;  7773          7878  3          IF DBG$NGET_SYMID (.V_VALDESC, SYMID_LIST, DUMMY)
;  7774          7879  3          THEN
;  7775          7880  3              DBG$STA_LOCK_SYMID (.SYMID_LIST);
;  7776          7881  3          DBG$NCOPY_DESC (.V_VALDESC, EVENT[EVENT$L_PRIMARY], DUMMY, TRUE);
;  7777          7882  2          END;
;  7778          7883  2
;  7779          7884  2
;  7780          7885  2      ! Build a Value Descriptor.
;  7781          7886  2      ! Then copy the value descriptor into permanent memory.
;  7782          7887  2      ! This is needed so that the storage stays around even if we
;  7783          7888  2      ! execute DO clauses on the watchpoint (which may in turn
;  7784          7889  2      ! cause calls to REL_TEMPMEM).
;  7785          7890  2      ! The memory for NEWVALUE is freed up in DBG$EXCEPTION_HANDLER
;  7786          7891  2      ! when it is finished with the Value Descriptor.
;  7787          7892  2      !
;  7788          7893  2      DBG$PRIM_TO_VAL(.V_VALDESC, DBG$K_VALUE_DESC, VALDESC);
;  7789          7894  2      DBG$NCOPY_DESC (.VALDESC, NEWVALUE, DUMMY, TRUE);
;  7790          7895  2      RETURN 0;
;  7791          7896  1      END;


                                                                        .PSECT  DBG$PLIT,NOWRT,  SHR,  PIC,0

48 43 54 41 57 2D 49 2D 47 55 42 45 44 25 24  0054B P.AEY:   .ASCII  \$%DEBUG-I-WATCHVAR, watched variable \     ;
61 76 20 64 65 68 63 74 61 77 20 2C 52 41 56  0055A                                                            ;
                        20 65 6C 62 61 69 72  00569                                                            ;
20 74 75 6F 20 65 6E 6F 67 20 73 61 68 20 16  00570 P.AEZ:   .ASCII  <22>\ has gone out of scope\              ;
                        65 70 6F 63 73 20 66 6F  0057F                                                         ;
6F 74 20 73 74 6E 69 6F 70 20 77 6F 6E 20 22  00587 P.AFA:   .ASCII  \" now points to a different address\     ;
64 61 20 74 6E 65 72 65 66 66 69 64 20 61 20  00596                                                            ;
                                  73 73 65 72 64  005A5                                                        ;


                                                                        .PSECT  DBG$CODE,NOWRT,  SHR,  PIC,0

                                                        03FC 00000 GET_WATCH_POINT_VALUE:
```

```
                                59 00000000G   00     9E 00002          MOVAB   DBG$NGET_SYMID, R9
                                58 00000000G   00     9E 00009          MOVAB   DBG$PRINT, R8
                                57 00000000G   00     9E 00010          MOVAB   DBG$NCOPY_DESC, R7
                                56 00000000'   EF     9E 00017          MOVAB   P.AEY, R6
                                55 00000000'   EF     9E 0001E          MOVAB   INVALID_FLAG, R5
                                5E                    14   C2 00025          SUBL2   #20, SP
                                                      7E   D4 00028          CLRL    -(SP)                                   ;7840
                                             14       AE   9F 0002A          PUSHAB  DUMMY
                                             08       AE   9F 0002D          PUSHAB  PRIMARY
                                54           04       AC   D0 00030          MOVL    EVENT, R4
                                             28       A4   DD 00034          PUSHL   40(R4)
                                67                    04   FB 00037          CALLS   #4, DBG$NCOPY_DESC
                                                      65   D4 0003A          CLRL    INVALID_FLAG                            ;7841
                                             04       AE   9F 0003C          PUSHAB  V_VALDESC                               ;7842
                                7E           83       8F   9A 0003F          MOVZBL  #131, -(SP)
                                             08       AE   DD 00043          PUSHL   PRIMARY
                          0000V              CF            03   FB 00046          CALLS   #3, PRIM_TO_VAL
                                             0F            65   E8 0004B          BLBS    INVALID_FLAG, 1$                        ;7848
                                50           04       AE   D0 0004E          MOVL    V_VALDESC, R0                           ;7849
                34   A4            14       A0            0C   29 00052          CMPC3   #12, 20(R0), 52(R4)
                                                      03   12 00058          BNEQ    1$
                                                 008D      31 0005A          BRW     6$
                                                      56   DD 0005D 1$:      PUSHL   R6                                      ;7856
                                68                    01   FB 0005F          CALLS   #1, DBG$PRINT
                                             28       A4   DD 00062          PUSHL   40(R4)                                  ;7857
                          00000000G          00            01   FB 00065          CALLS   #1, DBG$PRINT_IDENTIFIER
                                             05            65   E9 0006C          BLBC    INVALID_FLAG, 2$                        ;7858
                                             25       A6   9F 0006F          PUSHAB  P.AEZ                                   ;7860
                                                      03   11 00072          BRB     3$
                                             3C       A6   9F 00074 2$:      PUSHAB  P.AFA                                   ;7862
                                68                    01   FB 00077 3$:      CALLS   #1, DBG$PRINT
                          00000000G          00            00   FB 0007A          CALLS   #0, DBG$NEWLINE                         ;7863
                                             10       AE   9F 00081          PUSHAB  DUMMY                                   ;7868
                                             0C       AE   9F 00084          PUSHAB  SYMID_LIST
                                             28       A4   DD 00087          PUSHL   40(R4)
                                69                    03   FB 0008A          CALLS   #3, DBG$NGET_SYMID
                                0A                    50   E9 0008D          BLBC    R0, 4$
                                             08       AE   DD 00090          PUSHL   SYMID_LIST                              ;7870
                          00000000G          00            01   FB 00093          CALLS   #1, DBG$STA_UNLOCK_SYMID
                                             10       AE   9F 0009A 4$:      PUSHAB  DUMMY                                   ;7871
                                             28       A4   DD 0009D          PUSHL   40(R4)
                          00000000G          00            02   FB 000A0          CALLS   #2, DBG$NFREE_DESC
                                7E           83       8F   9A 000A7          MOVZBL  #131, -(SP)                             ;7876
                                             34       A4   9F 000AB          PUSHAB  52(R4)
                          00000000G          00            02   FB 000AE          CALLS   #2, DBG$MAKE_VAL_DESC
                                04           AE            50   D0 000B5          MOVL    R0, V_VALDESC
04   BE            08                  18 00000000G   00     F0 000B9          INSV    DBG$GB_LANGUAGE, #24, #8, @V_VALDESC    ;7877
                                             10       AE   9F 000C3          PUSHAB  DUMMY                                   ;7878
                                             0C       AE   9F 000C6          PUSHAB  SYMID_LIST
                                             0C       AE   DD 000C9          PUSHL   V_VALDESC
                                69                    03   FB 000CC          CALLS   #3, DBG$NGET_SYMID
                                0A                    50   E9 000CF          BLBC    R0, 5$
                                             08       AE   DD 000D2          PUSHL   SYMID_LIST                              ;7880
                          00000000G          00            01   FB 000D5          CALLS   #1, DBG$STA_LOCK_SYMID
                                                      01   DD 000DC 5$:      PUSHL   #1                                      ;7881
                                             14       AE   9F 000DE          PUSHAB  DUMMY
```

```
                                 28   A4  9F 000E1          PUSHAB  40(R4)                                  ;
                                 10   AE  DD 000E4          PUSHL   V_VALDESC                               ;
                           67         04  FB 000E7          CALLS   #4, DBG$NCOPY_DESC                      ;
                                 0C   AE  9F 000EA 6$:      PUSHAB  VALDESC                                 ; 7893
                           7E    7A   8F  9A 000ED          MOVZBL  #122, -(SP)                             ;
                                 0C   AE  DD 000F1          PUSHL   V_VALDESC                               ;
                 00000000G 00          03  FB 000F4          CALLS   #3, DBG$PRIM_TO_VAL                     ;
                                       01  DD 000FB          PUSHL   #1                                      ; 7894
                                 14   AE  9F 000FD          PUSHAB  DUMMY                                   ;
                                 04   A5  9F 00100          PUSHAB  NEWVALUE                                ;
                                 18   AE  DD 00103          PUSHL   VALDESC                                 ;
                           67         04  FB 00106          CALLS   #4, DBG$NCOPY_DESC                      ;
                                          04 00109          RET                                             ; 7896

; Routine Size:  266 bytes,    Routine Base:  DBG$CODE + 2F23
```

```
;  7793          7897  1 ROUTINE PRIM_TO_VAL (PRIM_DESC, TARGET_TYPE, VAL_DESC) : NOVALUE =
;  7794          7898  1 !
;  7795          7899  1 ! FUNCTION
;  7796          7900  1 !       This routine is a cover routine for DBG$PRIM_TO_VAL. It
;  7797          7901  1 !       establishes a handler to catch error signals from DBG$PRIM_TO_VAL,
;  7798          7902  1 !       and then calls DBG$PRIM_TO_VAL to do the work.
;  7799          7903  1 !
;  7800          7904  1 ! INPUTS
;  7801          7905  1 !       See DBG$PRIM_TO_VAL in DBGVALUES.
;  7802          7906  1 !
;  7803          7907  1 ! OUTPUTS
;  7804          7908  1 !       See DBG$PRIM_TO_VAL in DBGVALUES.
;  7805          7909  1 !
;  7806          7910  2     BEGIN
;  7807          7911  2     ENABLE
;  7808          7912  2         PRIM_TO_VAL_HANDLER;
;  7809          7913  2     DBG$PRIM_TO_VAL (.PRIM_DESC, .TARGET_TYPE, .VAL_DESC);
;  7810          7914  1     END;

                                    0000 00000 PRIM_TO_VAL:
                                               .WORD   Save nothing                          ;  7897
                          6D     0010   CF  DE 00002     MOVAL   1$, (FP)                     ;  7910
                          7E       08   AC  7D 00007     MOVQ    TARGET_TYPE, -(SP)           ;  7913
                                   04   AC  DD 0000B     PUSHL   PRIM_DESC                    ;
                00000000G  00           03  FB 0000E     CALLS   #3, DBG$PRIM_TO_VAL          ;
                                            04 00015     RET                                  ;  7914
                                    0000 00016 1$:      .WORD   Save nothing                 ;  7910
                                        7E  D4 00018     CLRL    -(SP)                        ;
                                        5E  DD 0001A     PUSHL   SP                           ;
                              7E        04  AC  7D 0001C     MOVQ    4(AP), -(SP)             ;
                        0000V CF            03  FB 00020     CALLS   #3, PRIM_TO_VAL_HANDLER  ;
                                            04 00025     RET                                  ;

; Routine Size:  38 bytes,    Routine Base:  DBG$CODE + 302D
```

```
;  7812          7915  1 ROUTINE PRIM_TO_VAL_HANDLER(SIGARG, MECHARG, ENBLARG) =
;  7813          7916  1 !
;  7814          7917  1 ! FUNCTION
;  7815          7918  1 !       This is the error handler for the routine PRIM_TO_VAL. If
;  7816          7919  1 !       an error occurs during the evaluation of a Primary then this
;  7817          7920  1 !       routine is invoked and it sets the own variable INVALID_FLAG
;  7818          7921  1 !       to indicate that the Primary is now invalid.
;  7819          7922  1 !
;  7820          7923  1 ! INPUTS
;  7821          7924  1 !       SIGARG  - The signal argument vector.
;  7822          7925  1 !
;  7823          7926  1 !       MECHARG - The mechanism argument vector.
;  7824          7927  1 !
;  7825          7928  1 !       ENBLARG - The enable argument vector (EVENT pointer is passed in
;  7826          7929  1 !                 from here).
;  7827          7930  1 !
;  7828          7931  1 ! OUTPUT
;  7829          7932  1 !       The OWN variable INVALID_FLAG is set to TRUE.
;  7830          7933  1 !
;  7831          7934  2     BEGIN
;  7832          7935  2     MAP
;  7833          7936  2         ENBLARG: REF VECTOR[,LONG],
;  7834          7937  2         SIGARG: REF VECTOR[,LONG];
;  7835          7938  2
;  7836          7939  2
;  7837          7940  2     ! If we were unwinding, continue unwinding.
;  7838          7941  2     !
;  7839          7942  2     IF .SIGARG[1] EQL SS$_UNWIND
;  7840          7943  2     THEN
;  7841          7944  2         RETURN SS$_CONTINUE;
;  7842          7945  2
;  7843          7946  2
;  7844          7947  2     ! Set the OWN flag saying the Primary is invalid.
;  7845          7948  2     !
;  7846          7949  2     INVALID_FLAG = TRUE;
;  7847          7950  2
;  7848          7951  2
;  7849          7952  2     ! Unwind to the caller of PRIM_TO_VAL.
;  7850          7953  2     !
;  7851          7954  2     $SETUNWIND();
;  7852          7955  2     RETURN 0;
;  7853          7956  1     END;


                                0000 00000 PRIM_TO_VAL_HANDLER:
                                           .WORD   Save nothing                    ;  7915
                50         04    AC  D0 00002          MOVL    SIGARG, R0         ;  7942
00000920        8F         04    A0  D1 00006          CMPL    4(R0), #2336       ;
                                   04  12 0000E          BNEQ    1$                 ;
                50                 01  D0 00010          MOVL    #1, R0             ;  7944
                                       04 00013          RET                        ;
00000000'       EF                 01  D0 00014 1$:      MOVL    #1, INVALID_FLAG   ;  7949
                                   7E  7C 0001B          CLRQ    -(SP)              ;  7954
00000000G       00                 02  FB 0001D          CALLS   #2, SYS$UNWIND     ;
```

```
                50  D4 00024          CLRL    R0                                  ; 7955
                    04 00026          RET                                         ; 7956

; Routine Size:  39 bytes,    Routine Base:  DBG$CODE + 3053
```

```
;7855     7957  1 ROUTINE PARSE_WHEN_CONDITION(EVENT): NOVALUE =
;7856     7958  1 !
;7857     7959  1 ! FUNCTION
;7858     7960  1 !       This routine calls the parser to parse the when condition.
;7859     7961  1 !       If any error occurs during the parsing, final handler catches
;7860     7962  1 !       the error message, announce the message, WHEN_CONDITION is set
;7861     7963  1 !       to FALSE in this case, Break point remains set.
;7862     7964  1 !
;7863     7965  1 ! INPUTS
;7864     7966  1 !       EVENT   - The address of the event_entry.
;7865     7967  1 !
;7866     7968  1 ! OUTPUTS
;7867     7969  1 !       None.
;7868     7970  1 !
;7869     7971  1
;7870     7972  2     BEGIN
;7871     7973  2
;7872     7974  2     MAP
;7873     7975  2         EVENT: REF EVENT$EVENT_DESCRIPTOR;  ! Event entry pointer
;7874     7976  2
;7875     7977  2     BUILTIN CALLG;
;7876     7978  2
;7877     7979  2     LOCAL
;7878     7980  2         CONDITION,                          ! local when condition value
;7879     7981  2         CONDITION_VAL :     DBG$STG_DESC,   ! Condition Value Descr
;7880     7982  2         CONDITION_STR :     DBG$STG_DESC,   ! Condition String Descr
;7881     7983  2         CONDITION_TXT :     REF VECTOR [, WORD], ! Condition text
;7882     7984  2         CONDITION_RDX,                      !    radix
;7883     7985  2         MESSAGE_VECT,                       ! Message Vector
;7884     7986  2         WHEN_ENTRY :    REF EVENT$WHEN_DESCRIPTOR;  ! WHEN Descriptor
;7885     7987  2
;7886     7988  2     ENABLE
;7887     7989  2         DBG$FINAL_HANDL;
;7888     7990  2
;7889     7991  2
;7890     7992  2     ! Assume WHEN condition is always true to begin with, so just in
;7891     7993  2     ! case, bad things happened during the calls to other routine,
;7892     7994  2     ! break point is still taken.
;7893     7995  2     !
;7894     7996  2     WHEN_CONDITION = TRUE;
;7895     7997  2
;7896     7998  2
;7897     7999  2     ! Point to the WHEN entry.
;7898     8000  2     !
;7899     8001  2     WHEN_ENTRY = .EVENT [EVENT$L_WHEN];
;7900     8002  2
;7901     8003  2
;7902     8004  2     ! Point to the WHEN expression.
;7903     8005  2     !
;7904     8006  2     CONDITION_TXT = .WHEN_ENTRY [EVENT$L_WHEN_POINT];
;7905     8007  2
;7906     8008  2
;7907     8009  2     ! Set up the condition descriptors.
;7908     8010  2     !
;7909     8011  2     CONDITION_STR [DSC$B_CLASS] = DSC$K_CLASS_S;
;7910     8012  2     CONDITION_STR [DSC$B_DTYPE] = DSC$K_DTYPE_T;
;7911     8013  2     CONDITION_STR [DSC$W_LENGTH] = .CONDITION_TXT [0];
```

```
;  7912          8014  2     CONDITION_STR [DSC$A_POINTER] = CONDITION_TXT [1];
;  7913          8015  2
;  7914          8016  2     ! Set up some globals that C uses for purposes of preseving the
;  7915          8017  2     ! original casing.
;  7916          8018  2     !
;  7917          8019  2     IF .DBG$GB_LANGUAGE EQL DBG$K_C
;  7918          8020  2     THEN
;  7919          8021  3         BEGIN
;  7920          8022  3         DBG$GL_ORIG_COMMAND_PTR = CONDITION_TXT [1];
;  7921          8023  3         DBG$GL_UPCASE_COMMAND_PTR[0] = CONDITION_TXT [1];
;  7922          8024  3         DBG$GL_UPCASE_COMMAND_PTR[1] = CONDITION_TXT[1] + .CONDITION_TXT[0] - 1;
;  7923          8025  2         END;
;  7924          8026  2
;  7925          8027  2     ! Determine the current radix.
;  7926          8028  2     !
;  7927          8029  2     CONDITION_RDX = .DBG$GB_RADIX[DBG$B_RADIX_INPUT];
;  7928          8030  2
;  7929          8031  2
;  7930          8032  2     ! Obtain a value descriptor for the condition.
;  7931          8033  2     !
;  7932          8034  2     IF NOT DBG$NPARSE_EXPRESSION
;  7933          8035  2                 (CONDITION_STR,
;  7934          8036  2                  .CONDITION_RDX,
;  7935          8037  2                  CONDITION,
;  7936          8038  2                  TOKEN$K_TERM_NONE,
;  7937          8039  2                  MESSAGE_VECT
;  7938          8040  2                 )
;  7939          8041  2     THEN
;  7940          8042  2         CALLG (.MESSAGE_VECT, LIB$SIGNAL);
;  7941          8043  2
;  7942          8044  2
;  7943          8045  2     ! Set up the vax descriptor for the condition.
;  7944          8046  2     ! For now, we just declare the descriptor to be longword integer,
;  7945          8047  2     ! since this causes the fewest problems in the type converter.
;  7946          8048  2     ! Eventually, if we get a Boolean type and all languages support
;  7947          8049  2     ! it then we will build a target descriptor of this type.
;  7948          8050  2     !
;  7949          8051  2     CONDITION_VAL [DSC$B_CLASS] = DSC$K_CLASS_S;
;  7950          8052  2     CONDITION_VAL [DSC$B_DTYPE] = DSC$K_DTYPE_L;
;  7951          8053  2     CONDITION_VAL [DSC$W_LENGTH] = 4;
;  7952          8054  2     CONDITION_VAL [DSC$A_POINTER] = WHEN_CONDITION;
;  7953          8055  2     CONDITION_VAL [DSC$L_POS] = 0;
;  7954          8056  2
;  7955          8057  2
;  7956          8058  2     ! Special case for PASCAL. PASCAL returns descriptors
;  7957          8059  2     ! of type Boolean (dsc$k_dtype_tf) for relational expressions.
;  7958          8060  2     !
;  7959          8061  2     IF .DBG$GB_LANGUAGE EQL DBG$K_PASCAL
;  7960          8062  2     THEN
;  7961          8063  3         BEGIN
;  7962          8064  3         CONDITION_VAL [DSC$B_DTYPE] = DSC$K_DTYPE_TF;
;  7963          8065  3         CONDITION_VAL [DSC$W_LENGTH] = 1;
;  7964          8066  2         END;
;  7965          8067  2
;  7966          8068  2
;  7967          8069  2     ! Do the conversion from value descriptor to integer.  NOTE THAT
;  7968          8070  2     ! I'M REUSING THE DESCRIPTOR, AND CONDITION LONGWORD.
```

```
;  7969          8071  2     !
;  7970          8072  2     IF NOT DBG$NTYPE_CONV (.CONDITION,
;  7971          8073  2                            DBG$K_DEFAULT,
;  7972          8074  2                            DBG$K_VAX_DESC,
;  7973          8075  2                            CONDITION_VAL,
;  7974          8076  2                            MESSAGE_VECT
;  7975          8077  2                           )
;  7976          8078  2     THEN
;  7977          8079  2         CALLG (.MESSAGE_VECT, LIB$SIGNAL);
;  7978          8080  2
;  7979          8081  2     RETURN 0;
;  7980          8082  1     END;


                                003C 00000 PARSE_WHEN_CONDITION:
                                                    .WORD   Save R2,R3,R4,R5                                ;  7957
                            55 00000000'   FF   9E 00002            MOVAB   WHEN_CONDITION, R5
                            54 00000000G   00   9E 00009            MOVAB   LIB$SIGNAL, R4
                            53 00000000G   00   9E 00010            MOVAB   DBG$GB_LANGUAGE, R3
                            5E                  20  C2 00017        SUBL2   #32, SP
                            6D      009D   CF   DE 0001A            MOVAL   5$, (FP)                        ;  7972
                            65             01   D0 0001F            MOVL    #1, WHEN_CONDITION              ;  7996
                            50       04    AC   D0 00022            MOVL    EVENT, R0                       ;  8001
                            50       20    A0   D0 00026            MOVL    32(R0), WHEN_ENTRY
                            50       0C    A0   D0 0002A            MOVL    12(WHEN_ENTRY), CONDITION_TXT   ;  8006
                        0A  AE       010E  8F   B0 0002E            MOVW    #270, CONDITION_STR+2           ;  8012
                            52                 60  3C 00034        MOVZWL  (CONDITION_TXT), R2             ;  8013
                        08  AE                 52  B0 00037        MOVW    R2, CONDITION_STR
                            51       02    A0   9E 0003B            MOVAB   2(R0), R1                       ;  8014
                        0C  AE                 51  D0 0003F        MOVL    R1, CONDITION_STR+4
                            07                 63  91 00043        CMPB    DBG$GB_LANGUAGE, #7             ;  8019
                                               17  12 00046        BNEQ    1$
                00000000G   00                 51  D0 00048        MOVL    R1, DBG$GL_ORIG_COMMAND_PTR     ;  8022
                00000000G   00                 51  D0 0004F        MOVL    R1, DBG$GL_UPCASE_COMMAND_PTR   ;  8023
                00000000G   00           01 A240   9E 00056        MOVAB   1(R2)[CONDITION_TXT], -         ;  8024
                                                                    DBG$GL_UPCASE_COMMAND_PTR+4
                            50 00000000G   00   9A 0005F 1$:        MOVZBL  DBG$GB_RADIX, CONDITION_RDX     ;  8029
                                       04   AE   9F 00066            PUSHAB  MESSAGE_VECT                    ;  8035
                                            7E   D4 00069            CLRL    -(SP)
                                       08   AE   9F 0006B            PUSHAB  CONDITION
                                            50   DD 0006E            PUSHL   CONDITION_RDX                   ;  8036
                                       18   AE   9F 00070            PUSHAB  CONDITION_STR                   ;  8035
                00000000G   00                 05   FB 00073        CALLS   #5, DBG$NPARSE_EXPRESSION
                            04                 50   E8 0007A        BLBS    R0, 2$
                            64             04   BE   FA 0007D        CALLG   @MESSAGE_VECT, LIB$SIGNAL       ;  8042
                        14  AE 01080004        8F   D0 00081 2$:     MOVL    #17301508, CONDITION_VAL        ;  8053
                        18  AE                 65   9E 00089        MOVAB   WHEN_CONDITION, CONDITION_VAL+4 ;  8054
                                       1C   AE   D4 0008D            CLRL    CONDITION_VAL+8                 ;  8055
                            06                 63   91 00090        CMPB    DBG$GB_LANGUAGE, #6             ;  8061
                                               08   12 00093        BNEQ    3$
                        16  AE                 28   90 00095        MOVB    #40, CONDITION_VAL+2            ;  8064
                        14  AE                 01   B0 00099        MOVW    #1, CONDITION_VAL               ;  8065
                                       04   AE   9F 0009D 3$:        PUSHAB  MESSAGE_VECT                    ;  8072
                                       18   AE   9F 000A0            PUSHAB  CONDITION_VAL
```

```
                         7E      82    8F   9A 000A3          MOVZBL  #130, -(SP)                                ;
                                       01   DD 000A7          PUSHL   #1                                          ;
                               10      AE   DD 000A9          PUSHL   CONDITION                                   ;
                00000000G      00            05   FB 000AC          CALLS   #5, DBG$NTYPE_CONV                  ;
                               04            50   E8 000B3          BLBS    R0, 4$                              ;
                               64      04    BE   FA 000B6          CALLG   @MESSAGE_VECT, LIB$SIGNAL           ;  8079
                                             04 000BA 4$:          RET                                         ;  8082
                                       0000 000BB 5$:          .WORD   Save nothing                        ;  7972
                                       7E   D4 000BD          CLRL    -(SP)                                       ;
                                       5E   DD 000BF          PUSHL   SP                                          ;
                         7E      04    AC   7D 000C1          MOVQ    4(AP), -(SP)                                ;
                00000000G      00            03   FB 000C5          CALLS   #3, DBG$FINAL_HANDL                 ;
                                             04 000CC          RET                                         ;

; Routine Size:  205 bytes,    Routine Base:  DBG$CODE + 307A

; 7981          8083  1
```

```
;  7983          8084  1 ROUTINE MATCH_RIGHT_CALL_FRAME(EVENT) =
;  7984          8085  1 !
;  7985          8086  1 ! FUNCTION
;  7986          8087  1 !       This routine is used to match the exact call frame at the time
;  7987          8088  1 !       we set bit 15, or turn off bit 15 in saved PSW and the time we got
;  7988          8089  1 !       reserved operand fault.
;  7989          8090  1 !
;  7990          8091  1 !       For FP pointer may be changed inside of the call by the called
;  7991          8092  1 !       routine.  So to be safe, we don't just compare the pointers, we
;  7992          8093  1 !       check some call frame contents as well.
;  7993          8094  1 !
;  7994          8095  1 ! INPUTS
;  7995          8096  1 !       Event entry for the event we consister.
;  7996          8097  1 !
;  7997          8098  1 ! OUTPUTS
;  7998          8099  1 !       True for Yes, this is the frame caused the event,
;  7999          8100  1 !       Fasle for No, this is not the frame caused the event.
;  8000          8101  1 !
;  8001          8102  1
;  8002          8103  2     BEGIN
;  8003          8104  2     MAP
;  8004          8105  2         EVENT: REF EVENT$EVENT_DESCRIPTOR;
;  8005          8106  2
;  8006          8107  2     LOCAL
;  8007          8108  2         CALL_FRAME: REF BLOCK[,BYTE],   ! Pointer to FP
;  8008          8109  2         CALL_MASK: WORD,                ! Mask in Call frame
;  8009          8110  2         RUN_FRAME: REF BLOCK[,BYTE],    ! FP was saved in DEBUG run frame
;  8010          8111  2         RUN_MASK: WORD;                 ! Mask in current FP
;  8011          8112  2
;  8012          8113  2
;  8013          8114  2     ! If there is no FP existed, simply returns.
;  8014          8115  2     !
;  8015          8116  2     IF .EVENT [EVENT$L_USERS_FP] EQL 0 THEN RETURN FALSE;
;  8016          8117  2
;  8017          8118  2     ! Dig out current FP from DEBUG runframe.
;  8018          8119  2     !
;  8019          8120  2     RUN_FRAME = .DBG$RUNFRAME [DBG$L_USER_FP];
;  8020          8121  2
;  8021          8122  2     ! If the call frame saved in event entry is the same as current FP,
;  8022          8123  2     ! got it, no problem.
;  8023          8124  2     !
;  8024          8125  2     IF .EVENT [EVENT$L_USERS_FP] EQL .RUN_FRAME
;  8025          8126  2     THEN
;  8026          8127  2         RETURN TRUE;
;  8027          8128  2
;  8028          8129  2     ! Need to do further investigation.  Dig out the contents of the call
;  8029          8130  2     ! frame was saved from Call frame.
;  8030          8131  2     !
;  8031          8132  2     CALL_FRAME = .EVENT [EVENT$L_CALL_FRAME];
;  8032          8133  2     IF .CALL_FRAME EQL 0 THEN RETURN FALSE;
;  8033          8134  2
;  8034          8135  2     ! Compare the mask.  But don't compare the stack alignment, compare
;  8035          8136  2     ! register mask and calls flag.  Compare saved AP, and FP.
;  8036          8137  2     !
;  8037          8138  2     CALL_MASK = .CALL_FRAME[SF$W_SAVE_MASK];
;  8038          8139  2     RUN_MASK = .RUN_FRAME[SF$W_SAVE_MASK];
;  8039          8140  2     CALL_MASK = .CALL_MASK AND %X'7FFF';
```

```
;  8040          8141  2     RUN_MASK = .RUN_MASK AND %X'7FFF';
;  8041          8142  2     IF (.CALL_MASK EQL .RUN_MASK) AND
;  8042          8143  2        (.CALL_FRAME[SF$L_SAVE_AP] EQL .RUN_FRAME[SF$L_SAVE_AP]) AND
;  8043          8144  3        (.CALL_FRAME[SF$L_SAVE_FP] EQL .RUN_FRAME[SF$L_SAVE_FP])
;  8044          8145  2     THEN
;  8045          8146  3         BEGIN
;  8046          8147  3
;  8047          8148  3         ! Got it, update the FP to current FP.  So we can set/clear bit 15
;  8048          8149  3         ! in saved PSW in the correct FP.
;  8049          8150  3         !
;  8050          8151  3         EVENT [EVENT$L_USERS_FP] = .RUN_FRAME;
;  8051          8152  3         RETURN TRUE;
;  8052          8153  3         END
;  8053          8154  2     ELSE
;  8054          8155  2         RETURN FALSE;
;  8055          8156  2
;  8056          8157  1     END;


                                        003C 00000 MATCH_RIGHT_CALL_FRAME:
                                                   .WORD   Save R2,R3,R4,R5                                    ;  8084
                                50        04   AC  D0 00002          MOVL    EVENT, R0                          ;  8116
                                          24   A0  D5 00006          TSTL    36(R0)                             ;
                                               46  13 00009          BEQL    2$                                 ;
                                51 00000000G   00  D0 0000B          MOVL    DBG$RUNFRAME+56, RUN_FRAME         ;  8120
                                51        24   A0  D1 00012          CMPL    36(R0), RUN_FRAME                  ;  8125
                                               35  13 00016          BEQL    1$                                 ;
                                52        3C   A0  D0 00018          MOVL    60(R0), CALL_FRAME                 ;  8132
                                               33  13 0001C          BEQL    2$                                 ;  8133
                                54        06   A2  B0 0001E          MOVW    6(CALL_FRAME), CALL_MASK           ;  8138
                                53        06   A1  B0 00022          MOVW    6(RUN_FRAME), RUN_MASK             ;  8139
                     55                 54        0F  00 EF 00026    EXTZV   #0, #15, CALL_MASK, R5             ;  8140
                                54             55  B0 0002B          MOVW    R5, CALL_MASK                      ;
                     55                 53        0F  00 EF 0002E    EXTZV   #0, #15, RUN_MASK, R5              ;  8141
                                53             55  B0 00033          MOVW    R5, RUN_MASK                       ;
                                53             54  B1 00036          CMPW    CALL_MASK, RUN_MASK                ;  8142
                                               16  12 00039          BNEQ    2$                                 ;
                                     08   A1        08  A2 D1 0003B    CMPL    8(CALL_FRAME), 8(RUN_FRAME)        ;  8143
                                               0F  12 00040          BNEQ    2$                                 ;
                                     0C   A1        0C  A2 D1 00042    CMPL    12(CALL_FRAME), 12(RUN_FRAME)      ;  8144
                                               08  12 00047          BNEQ    2$                                 ;
                                     24   A0             51  D0 00049    MOVL    RUN_FRAME, 36(R0)                  ;  8151
                                          50             01  D0 0004D 1$: MOVL    #1, R0                         ;  8155
                                                         04  00050      RET                                    ;
                                                         50  D4 00051 2$: CLRL    R0                             ;  8157
                                                         04  00053      RET                                    ;

; Routine Size:  84 bytes,    Routine Base:  DBG$CODE + 3147

;  8057          8158  1
;  8058          8159  1 END                                 ! End of module
;  8059          8160  1
;  8060          8161  0 ELUDOM
```

```
                                                        .EXTRN  LIB$SIGNAL, SYS$UNWIND

;                                PSECT SUMMARY
;
;       Name                    Bytes                           Attributes
;
;  DBG$GLOBAL                     69  NOVEC,  WRT,  RD ,NOEXE,NOSHR,  LCL,  REL,  CON,  PIC,ALIGN(2)
;  DBG$OWN                       356  NOVEC,  WRT,  RD ,NOEXE,NOSHR,  LCL,  REL,  CON,  PIC,ALIGN(2)
;  DBG$CODE                    12699  NOVEC,NOWRT,  RD ,  EXE,  SHR,  LCL,  REL,  CON,  PIC,ALIGN(0)
;  DBG$PLIT                     1450  NOVEC,NOWRT,  RD ,  EXE,  SHR,  LCL,  REL,  CON,  PIC,ALIGN(0)


;                              Library Statistics
;
;                                      -------- Symbols --------      Pages       Processing
;       File                           Total    Loaded   Percent      Mapped      Time
;
;  _$255$DUA28:[SYSLIB]LIB.L32;1        18619        42         0        1000        00:01.8
;  _$255$DUA28:[DEBUG.OBJ]STRUCDEF.L32;1
;                                          32         2         6           7        00:00.2
;  _$255$DUA28:[DEBUG.OBJ]DBGLIB.L32;1   1545       267        17          97        00:02.0
;  _$255$DUA28:[DEBUG.OBJ]DSTRECRDS.L32;1
;                                         418       106        25          31        00:00.4
;  _$255$DUA28:[DEBUG.OBJ]DBGMSG.L32;1    386        26         6          22        00:00.3
;  _$255$DUA28:[DEBUG.OBJ]DBGGEN.L32;1    150         7         4          12        00:00.3


;                                    COMMAND QUALIFIERS

;       BLISS/CHECK=(FIELD,INITIAL,OPTIMIZE)/LIS=LIS$:DBGEVENT/OBJ=OBJ$:DBGEVENT MSRC$:DBGEVENT/UPDATE=(ENH$:DBGEVENT)

; Size:          12699 code + 1875 data bytes
; Run Time:         04:04.0
; Elapsed Time:     13:38.6
; Lines/CPU Min:     2006
; Lexemes/CPU-Min: 14391
; Memory Used:  1029 pages
; Compilation Complete
```

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DBGEXT
LIS

DBGEXADEP
LIS

DBGEXC
LIS